

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0122

INDIVIDUAL WASTE DISCHARGE REQUIREMENTS
FOR
GREENWOOD DAIRY
GLENN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

Findings

Facility Owner & Location

1. The Greenwood Dairy (hereafter "facility") is owned by Pieter Verboom and operated by Daniel Vander Dussen (collectively referred to here as "Discharger") and is located 4 miles south of Orland in Glenn County. The dairy is located in portions of Sections 10, 15, and 16, Township 21 North, Range 3 West, Mount Diablo Base and Meridian. Based upon U.S. Geological Survey (USGS) Orland 7.5-minute Quadrangle, the site coordinates are: Latitude: 39.674° N, Longitude: 122.190° W. County Road 27 borders the property to the north. Southern Pacific Railroad line and private parcels border the property to the west, and the Fulton Reclamation and Recycling Facility borders the property to the south. Irrigated cropland borders the property to the east. The dairy is located at 6569 County Road 27. General site location information is included as Attachment A and the site layout is included as Attachment B1.
2. The facility has been in operation since May 2001.

Facility Description

3. The Discharger currently milks 1800 milking cows, and has 400 dry cows, 800 bred heifers, and 350 calves. Other support stock (e.g. additional heifers and calves) is kept offsite. The facility currently produces approximately 432,000 gallons of milk per day. The Discharger proposes to increase the Phase 2 herd size to milk 2,900 cows, and have 450 dry cows, and 300 bred heifers, for a total herd size of 3,650 animals. The ultimate ("Phase 3") herd size will be 3,500 milk cows, 550 dry cows, and 50 bred heifers for a total of 4,100 animals. The maximum herd size currently at the facility is 3,350 animals based on the Preliminary Dairy Facility Assessment Report.

4. The Discharger operates on 890 total acres. Land under agricultural production at the facility consists of 680 acres located on Assessor's Parcel Numbers 024-040-018, 024-040-019, 024-090-004, 024-090-035, 024-090-044, 024-090-0071, and 024-100-017. In a typical year 340 acres are dedicated to alfalfa, and 340 acres are double cropped with corn and wheat. The Discharger applies dairy process wastewater as a natural fertilizer. The average irrigation requirements are approximately 2.5 acre-feet of water per acre per year. This equates to approximately 1,700 acre-feet of fresh water per year. In addition to fresh water irrigation, wastewater is applied to the fields via Ponds 2, 3, 4, and 5.
5. The dairy facility is located on approximately 50 acres that are used for the dairy production area, including corrals, free stall barns, milking parlor, feed storage, storage lagoons, and storm water detention basins (See Attachment B1), offices, two houses, and a small shop.
6. The facility is not located within the 100-year floodplain. The site is located in an area of minimal flooding, Zone C. Flood potentials are derived from the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA).

Waste Production

7. Waste water is generated from several practices: washing down the milking parlor; flushing free stall barns of manure; and rainwater coming into contact with manure (any rainwater that falls within the production area, that isn't captured by roof drains, must be routed to the waste water ponds). Solid manure is scraped from the corrals and collected from the mechanical separator. With the proposed expansion, dried manure not used for bedding will be sold offsite, as the nutrient requirements of the onsite crops will be met with process water application. Approximately 20 percent of manure will be used and recycled onsite as bedding (2,018 tons per year). The remaining 8,070 tons will be exported offsite.
8. An estimated 432,000 gallons per day (gpd) of fresh water from the two on-site water supply wells is used for the production area of the dairy. With the expansion, an estimated 589,210 gpd of fresh water from the on-site water supply wells will be used.
9. Once the herd expansion is complete, operation of the dairy is estimated to generate 18 pounds of manure at 46% moisture per animal unit per day, where an animal unit equals 1000 pounds of animal weight. At full capacity at the end of Phase 3, the facility will generate 10,088 dry tons of manure per year. This equates to a monthly generation of 907 tons. Of the 907 tons, approximately 20 percent (181 tons per month) is retained for use as bedding. The remainder is stockpiled onsite until it is removed. Removal is scheduled bi-annually in May and October of each year. Manure exported from the dairy has historically been divided among several farming

operations in the area. In the future, the majority of the manure will be sold to Compost Inc., a nearby composting facility that applies the composted material to their own orchards. Compost Inc. has the capacity to import approximately 32,000 tons of manure a year, which is four times the amount of manure estimated for export from the dairy. In the event that a new market need be found for the dairy manure, the options are other composting facilities, other agricultural facilities, purchasing additional cropland, and offering the manure for free.

10. The annual rainwater runoff and a 25-year, 24-hour storm event after evaporation will accumulate approximately 1,781,557 cubic feet, which will provide only a small percentage of the annual water needs for proposed crops.
11. The total amount of wastewater requiring storage over the 120-day maximum storage period, after removing losses due to evaporation and adding one 25-year 24-hour storm, is 4,294,389 cubic feet.

Wastewater Ponds

12. Wastewater generated at the facility is conveyed to a concrete-lined process pit, which is then pumped into a mechanical separator that settles out solid material from the flushing of the freestall barns and cleaning of the milking parlor. Wastewater then gravity flows into several storage ponds. There are six ponds. Pond 1 is for flush water storage. Pond 2 is for irrigation water storage. Ponds 3, 4, and 5 are for additional wastewater storage as needed and to provide improved sediment removal. Pond 6 will serve as an emergency pond for use only in times of heavy precipitation.
13. Pond 1, constructed in 2001, is 350 by 600 feet, has a surface area of approximately 4.8 acres and was excavated to a depth of 13.5 feet. Pond 2, also constructed in 2001, is 225 by 290 feet, and has a surface area of approximately 1.4 acres. It was excavated to a depth of approximately 14.5 feet. These two ponds were clay lined. The liner included 24 inches of clay material laid on top of a geosynthetic filter fabric base. The clay material was compacted to 92 percent relative compaction and having a minimum permeability of 1×10^{-6} centimeters per second. The clay material was covered with 2 feet of protective soil.
14. Four newer ponds were constructed in spring 2006. Ponds 3, 4, 5, and 6 are lined with 12 inches of clay material compacted to 95 percent relative compaction and having a permeability of 1×10^{-6} centimeters per second. Pond 3 is 164 feet by 809 feet. Pond 4 is 164 feet by 796 feet and Pond 5 is 158 feet by 782 feet. This equates to an approximate total of 6 acres of surface area. These three ponds are 14 feet deep with 1 to 3 slopes. Pond 6 is 6 feet deep by 917 feet by 568.5 feet.
15. The storage lagoons are constructed to handle runoff from the 25-year, 24-hour storm as long as the storage lagoons are properly managed throughout the year.

Clean storm water, not contacting manure or animals (parking lots, feed areas and office), is diverted away from the site. Roof runoff is diverted to the depression east of the site.

Groundwater Monitoring

16. The Discharger has installed a monitoring well system to characterize groundwater flow direction and gradient beneath the site, and characterize groundwater quality downgradient of the corrals, and downgradient of the storage lagoons. In addition, the Discharger monitors existing domestic and agricultural production wells for changes in water quality. There are 10 monitoring wells on site. Monitoring Wells MW-2, MW-3, MW-6, MW-8 and MW-9 are associated with the wastewater ponds; Monitoring Wells MW-1, MW-4, and MW-5 border the irrigated croplands; and Monitoring Wells MW-10 and MW-11 are downgradient from the corral area. The monitoring wells are sampled biannually.

Land Application Area

17. Wastewater and manure generated at the facility are currently applied to land owned and/or operated by the dairy at agronomic rates as described in the Nutrient Management Plan attached to the Conditional Use Permit Application and Submittal Package, dated April 2007. As soon as the expanded operations begin, solid manure will no longer be applied to cropland. An updated Nutrient Management Plan, dated 11 April 2008, indicates that only wastewater will be applied to cropland. Under the updated Nutrient Management Plan, the total nitrogen applied to the cropland will not exceed 1.4 times crop uptake.

18. All land application areas have tailwater recovery via field drains and sumps.

19. The discharger conducts inflow metering to estimate application rates from the storage lagoons to the cropland. The wastewater piped from Pond 1 to the eastern and southern most fields is routed through a flow meter. Another flow meter is to be installed for water piped from Ponds 3, 4, 5, and 6.

California Environmental Quality Act

20. The Glenn County Department of Planning and Public Works is the lead agency for purposes of the California Environmental Quality Act (CEQA). The Glenn County Department of Planning and Public Works adopted a Mitigated Negative Declaration on 19 December 2007. The Board reviewed and considered the environmental effects of the project identified in the Mitigated Negative Declaration. The Mitigated Negative Declaration identified mitigation measures to lessen or avoid significant effects on the environment. This

Order incorporates mitigation measures identified in the Mitigated Negative Declaration that are within the Board's jurisdiction, in Section 2.1.8 Hydrology and Water Quality, specifically Mitigation Measures # 5 and #6, which require the owner to obtain a General Construction Stormwater Permit and Waste Discharge Requirements. This Order includes requirements to assure compliance with the Porter-Cologne Water Quality Control Act and the applicable Basin Plan. This Order prohibits discharges of waste to surface water and prevents pollution of groundwater.

General Findings

21. This Order regulates the storage, management, and disposal of wastes on the dairy production area and land application area to protect the beneficial uses of underlying ground water and the surface waters that receive discharges from the facility.
22. For the purposes of this Order, "waste" includes, but is not limited to, manure, leachate, wastewater and any water, precipitation or rainfall runoff that contacts raw materials, products, or byproducts such as manure, compost piles, feed, silage, milk, or bedding. Wastewater is defined as water directly or indirectly used in operation of a milk cow dairy for any or all of the following; washing, cleaning, or flushing pens, barns, manure pits, or other dairy facilities; washing or spray cooling of animals; or dust control and includes any water or precipitation and precipitation runoff which comes into contact with any raw materials, products, or byproducts including, feed, milk, or bedding. Storm water is defined as storm water runoff, surface runoff, and drainage.
23. State Water Resources Control Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") (Resolution 68-16) requires that the Board maintain the high quality of waters of the State unless it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in water quality less than that prescribed in the policies. Any activity which produces or may produce waste must be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and that the highest water quality consistent with maximum benefit to the people of the State will be maintained. This Order is consistent with Resolution 68-16. It does not authorize pollution of waters of the State. It prohibits the discharge of waste to surface waters from the production area; it prohibits the discharge of waste to surface waters from the land application area; and it prohibits pollution of surface and groundwater. This Order requires the Discharger to meet requirements that constitute best practicable treatment or control. Groundwater monitoring will be conducted at the facility. This Order requires the Discharger to meet waste discharge and land

application specifications, monitoring and reporting requirements, and other provisions.

24. This Order does not authorize violation of any federal, state, or local law or regulation. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the Discharger from his liabilities under federal, state, or local law.
25. As stated in California Water Code Section 13263(g), the discharge of waste into waters of the State is a privilege, not a right, and this Order does not create a vested right to continue the discharge of waste. Failure to prevent conditions that create or threaten to create pollution or nuisance will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.
26. The Tehama-Colusa Canal crosses the northwest portion of the site approximately a half mile up gradient from the location of the dairy facility. If not controlled or retained, surface water drainage from the area flows to the Sacramento River. Beneficial uses of the Sacramento River are: municipal, industrial supply, agricultural supply, recreation, fresh water habitat, fish migration, fish spawning, and wildlife habitat.
27. Beneficial uses of groundwater in the surrounding area are domestic, municipal, industrial, and agricultural supply.
28. The Board adopted a Water Quality Control Plan for the Sacramento and San Joaquin River Basins (4th Ed. Revised October 2007) (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Plan. These requirements are consistent with the Plan.
29. These requirements are consistent with Title 27, Division 2, Chapter 7, Subchapter 2, California Code of Regulations, regulating confined animal facilities.
30. On **28 May 2008**, the Board notified the discharger and interested parties of its intent to issue Waste Discharge Requirements for this discharge and has provided them with a copy of the proposed Order and an opportunity to submit written comments.
31. After considering all comments pertaining to this Order during a public hearing on **31 July 2008** this Order was found consistent with the above findings.

IT IS HEREBY ORDERED that Daniel Vander Dussen, operator, and Peter Verboom, owner, dba Greenwood Dairy, its owners, tenants, agents, successors, and assigns, are no longer covered under Order No. R5-2007-0035 (Waste Discharge Requirements General Order for Existing Milk Cow Dairies) and instead, pursuant to California Water Code Sections 13260, 13263, and 13267 and in order to meet the provisions contained in Division 7 of the California Water Code and regulations and policies adopted there under, shall comply with the following;

A. Prohibitions

1. The discharge of waste other than as defined in General Finding 21 above or from septic tanks, or of hazardous waste, as defined in the California Water Code Section 13173 and Title 23 CCR Section 2521 (a), respectively, is prohibited. The disposal of waste not generated by on-site animal production activities as defined in Finding 7, above, is prohibited unless a Report of Waste Discharge for the disposal has been submitted to the Executive Officer and the Central Valley Water Board has issued or waived waste discharge requirements (WDRs).
2. The direct or indirect discharge of waste and/or storm water from the production area to surface waters is prohibited.
3. The discharge of wastewater to surface waters from a land application area is prohibited. Irrigation supply water that comes into contact or is blended with waste or wastewater shall be considered wastewater under this Prohibition.
4. The discharge of storm water to surface water from a land application area where manure or wastewater has been applied is prohibited unless the land application area has been managed consistent with a certified Nutrient Management Plan.
5. The application of wastewater to a land application area before, during, or after a storm event that would result in runoff of the applied water is prohibited.
6. The discharge of waste from the facility to surface waters which causes or contributes to an exceedance of any applicable water quality objective in the Basin Plan or any applicable state or federal water quality criteria, or a violation of any applicable state or federal policies or regulations is prohibited.
7. The collection, treatment, storage, discharge or disposal of waste from the facility that results in pollution or nuisance is prohibited.
8. The disposal of dead animals in any liquid manure or wastewater system is prohibited. The disposal of dead animals at the facility is prohibited except when federal, state or local officials declare a State of Emergency and where all other options for disposal have been pursued and failed and the onsite

disposal complies with all state and local policies for disposal of dead animals.

9. All animals shall be prohibited from entering any surface water within the animal confinement area (Title 27 CCR Section 22561).
10. The application of waste to lands not owned, leased, or controlled by the Discharger without written permission from the landowner or in a manner not approved by the Executive Officer, is prohibited.
11. The land application of manure or wastewater to land application areas for other than nutrient recycling is prohibited.
12. The use of manure to construct containment structures or to repair, replace, improve, or raise existing containment structures is prohibited.
13. The direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells is prohibited.

B. Specifications

Waste Discharge Specifications

1. The collection, treatment, storage, discharge, or disposal of wastes at the facility shall not result in: (1) discharge of waste constituents in a manner which could cause degradation of surface water or groundwater, (2) contamination or pollution of surface water or groundwater, (3) a condition of nuisance, (4) exceedance of water quality objectives, or (5) unreasonably affect beneficial uses (as defined by the California Water Code Section 13050).
2. The storage lagoons and the storm water detention basins at the facility shall be operated and maintained to be protective of water quality. If at any time the design, construction, operation, and/or maintenance of the lagoons and/or basins is not protective of water quality, the Discharger shall notify the Board and propose modifications in accordance with Required Reports and Notices E.1.b.
3. Prior to the enlargement of any of the existing storage lagoons; construction of any new lagoon or settling basin; or in the event that the design, construction, operation and/or maintenance of the lagoons is not protective of water quality the Discharger shall submit a design for review and approval by the Executive Officer. The design shall conform to either of the options described below:

- a. Tier 1: A pond designed to consist of a double liner constructed with 60-mil high-density polyethylene or material of equivalent durability with a leachate collection and removal system (constructed in accordance with Section 20340 of Title 27) between the two liners will be considered to be consistent with Resolution 68-16. Review for ponds designed to this standard will be conducted in less than 30 days of receipt of a complete design plan package submitted to the Board.
 - b. Tier 2: A pond designed in accordance with California Natural Resource Conservation Service (NRCS) Conservation Practice Standard 313 or equivalent and which the Discharger must demonstrate through submittal of technical reports that the alternative design is protective of groundwater quality as required in Specification B.4 below.
4. Prior to the enlargement of any of the existing storage lagoons; construction of any new lagoon or settling basin; or in the event that the design, construction, operation and/or maintenance of the lagoons is not protective of water quality the Discharger shall submit a design report for review and approval by the Executive Officer prepared by, or under the direct supervisor of, and certified by, a Civil Engineer who is registered pursuant to California law or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work. The design report shall include the following:
 - a. Design calculations demonstrating that adequate containment will be achieved.
 - b. Details on the liner and leachate collection and removal system (if appropriate) materials,
 - c. A schedule for construction and certification of completion,
 - d. A construction quality assurance plan describing testing and observations needed to document construction of the pond in accordance with the design and Sections 20323 and 20324 of Title 27,
 - e. An operations and maintenance plan for the pond, and
 - f. Unless waived by the Executive Officer, a technical report and groundwater model that demonstrates the proposed pond is in compliance with the groundwater limitations in this Order, including calculations that demonstrate the amount and quality of seepage from the proposed pond and its effect on water quality.

5. Prior to the placement of waste in any enlarged existing settling, storage, or retention pond or any such newly constructed pond, the Discharger shall submit a post construction report prepared by, or under the direct supervision of, and certified by, a Civil Engineer who is registered pursuant to California law or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work. Waste shall not be placed into the pond until the Executive Officer notifies the Discharger in writing that the post construction report is acceptable. The post construction report shall include: (1) verification that the pond meets the requirements of this Order including documentation of the results of the construction quality assurance testing and observations, (2) certification that the pond was constructed as designed and (3) as-built diagrams.
6. The facility shall have lagoons and conveyance structures that are designed, constructed, operated, and maintained to retain all facility wastewater generated during the storage period (maximum period of time anticipated between land application of wastewater), together with all precipitation on and drainage through manured areas, up to and including during a 25-year, 24-hour storm.
7. The production area, including storage lagoons, the process pit, and manured areas at the facility, shall be protected from inundation or washout by overflow from any stream channel during 100-year peak stream flows (Title 27 Section 22562(c)).
8. The level of waste in the storage lagoons and of water in the detention basins at the facility shall be kept a minimum of two (2) feet from the top of each pond. Less freeboard may be approved by the Executive Officer when a Civil Engineer who is registered pursuant to California law, or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work, demonstrates that the structural integrity of the ponds will be maintained with the proposed freeboard.
9. The storage lagoons and the detention basins shall be managed and maintained to prevent breeding of mosquitoes and other vectors. In particular,
 - a. Small coves and irregularities shall not be allowed around the perimeter of the water surface;
 - b. Weeds shall be minimized through control of water depth, harvesting, or other appropriate method;

- c. Dead algae, vegetation, and debris shall not accumulate on the water surface; and
 - d. Management shall be in accordance with the requirements of the Mosquito Abatement District.
10. The facility shall implement the following Best Management Practices to address potential fly problems:
- a. Daily inspections of water supply and circulation systems to ensure that any leaks are promptly repaired. These inspections shall include all watering troughs to ensure that mechanisms for controlling water level are operating effectively and are protected from damage;
 - b. Regular scraping of corrals to minimize the potential for development of fly populations on manure;
 - c. Weekly inspection of silage storage areas to ensure proper covering, drainage, and removal of any spoiled silage;
 - d. Weekly inspection of fence lines of corrals and other "edge" areas and removal of any accumulated manure.
11. All precipitation and surface drainage from outside of the facility (i.e., "run on") shall be diverted away from any manured areas unless such drainage is fully contained (Title 27 Section 22562(b)).
12. Storage lagoons designated to contain the 25-year, 24-hour storm event runoff must have a depth marker that clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from a 25-year, 24-hour storm event.
13. All roofs, buildings, and non-manured areas located in the production area at the facility shall be constructed or otherwise designed so that clean rainwater, including roof drainage, is diverted away from manured areas, including corrals and waste containment facilities, unless such drainage is fully contained in the wastewater retention system (Title 27 Section 22562(b)).
14. The milk parlor, animal confinement area (including corrals), and manure and feed storage areas, and any unpaved areas in the production area shall be designed and maintained to convey all water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water and the infiltration of water into the underlying soils. The Discharger shall, at a minimum of once per year, backfill any slope loss with compacted, non-manured material to maintain pre-existing slopes.

15. Unlined ditches, swales, and/or earthen-berm channels may not be used for storage of wastewater, manure, or tailwater and may only be used for conveyance of wastewater collected in the production area to the storage lagoons, conveyance of wastewater from the storage lagoon to the land application area, irrigation return water management, or temporary control of accidental spills.

Land Application Specifications

16. Land application of all waste from the facility shall be initially conducted in accordance with the certified Nutrient Management Plan. The Nutrient Management Plan is consistent with Resolution No. 68-16. Land application of wastes at the facility shall not pollute underlying groundwater or cause the underlying groundwater to contain any waste constituent, degradation product, or any constituent of soil mobilized by the interactions between applied waste and soil or soil biota, to exceed the groundwater prohibitions and specifications set forth in this Order. The Nutrient Management Plan shall be modified within 90 days if monitoring shows that discharge from the land application is polluting ground water or fails to comply with surface water quality objectives or criteria. The modifications must be designed to bring the facility into compliance with this Order.

17. The Discharger shall have a written agreement with each third party that receives wastewater from the Discharger for its own use. Each written agreement shall be included in the Discharger's Nutrient Management Plan and Annual Report. The written agreement(s) shall be effective until the third party is covered under waste discharge requirements or a waiver of waste discharge requirements that are adopted by the Central Valley Water Board and that are specific to the application of the Discharger's wastewater to land under the third party's control. The written agreement shall:

- a. Clearly identify:
 - i. The Discharger and dairy facility from which the wastewater originates,
 - ii. The third party that will control the application of the wastewater to land application areas,
 - iii. The Assessor's Parcel Number(s) and the acreage(s) of the land application areas where the wastewater will be applied, and
 - iv. The types of crops to be fertilized with the wastewater.
- b. Include an agreement by the third party to:

- i. Use the wastewater at agronomic rates appropriate for the crops to be grown, and
 - ii. Prevent the runoff to surface waters of wastewater, storm water or irrigation supply water that is blended with wastewater.
 - c. Include a certification statement, as specified in General Reporting Requirements C.7 of the Standard Provision and Reporting Requirements (which is attached to and made part of this Order), which is signed by both the Discharger and third party.
18. The application of liquid waste to land application areas shall be at rates that preclude development of vectors or other nuisance conditions and meet the conditions of the certified Nutrient Management Plan. Application shall be timed to minimize nitrogen movement below the root zone.
19. Land application areas that receive dry manure shall be managed through implementation of erosion control measures to minimize erosion that are consistent with the certified Nutrient Management Plan.
20. All wastewater applied to land application areas must infiltrate completely within 72 hours after application.
21. Wastewater shall not be applied to land application areas during periods when the soil is at or above field moisture capacity unless consistent with a certified Nutrient Management Plan.
22. Manure and wastewater shall not be applied closer than 100 feet to any down gradient surface waters, open tile line intake structures, sinkholes, or other conduits to surface waters, unless a 35-foot wide vegetated buffer or physical barrier is substituted for the 100-foot setback or alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions achieved by the 100-foot setback. Manure and wastewater shall not be applied, and corrals and wastewater ponds shall not be located, closer than 100 feet to any agricultural or domestic well.
23. Animal waste (manure solids) shall not be applied for disposal to any land that is not being used to grow crops. Crops must be planted within one month of waste application. Animal waste (manure solids) shall not be applied at this dairy unless the certified Nutrient Management Plan is revised to reflect their use.
24. Waste and land application areas shall be managed to prevent contamination of crops grown for human consumption. The term "crops grown for human consumption" refers only to crops that will not undergo subsequent

processing which adequately removes potential microbial danger to consumers.

C. Interim Groundwater Limitations

1. These interim groundwater limitations are to be applied at the shallowest groundwater beneath the facility. These limitations are based on either the maximum contaminant level (MCL) for the constituent as published in Title 22 CCR or other applicable Basin Plan objectives but they may or may not reflect the appropriate final groundwater limitations for this site. Final limitations will be established following completion of work required by this Order. Release of waste constituents from any treatment, storage, or disposal component associated with the facility shall not cause or contribute to groundwater.
 - a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality (as determined pursuant to the study described in Finding 35 and Provision E.12, and updated as appropriate as a result of ongoing monitoring), whichever is greater:
 - i. Nitrate as nitrogen of 10 mg/L (title 22 CCR MCL);
 - ii. Chloride of 250 mg/L (Title 22 CCR Secondary MCL);
 - iii. Total Dissolved Solids of 500 mg/L (Title 22 CCR Secondary MCL);
 - iv. Electrical Conductivity of 900 μ mhos/cm (Title 22 CCR Secondary MCL);
 - v. Most probable number of total coliform (either E. coli or fecal coliform bacteria) not to exceed 2.2/100 milliliters (title 22 CCR MCL);
 - vi. For constituents identified in Title 22 CCR, the MCLs quantified therein; and
 - b. Containing taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.
2. Final groundwater limitations will be developed based upon the results of the BPTC evaluations and monitoring conducted as directed by this Order and reported consistent with the Provisions below.

D. Provisions

1. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Individual Waste Discharge Requirements for Dairies in the Sacramento and San Joaquin River Basins* (Standard Provisions) dated **August 2007**, which is attached to and made part of this Order.
2. The Discharger shall comply with all applicable provisions of the California Water Code, Title 27 CCR, and the applicable Water Quality Control Plans.
3. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2008-0122 which is part of this Order, and future revisions thereto as specified by the Board or the Executive Officer.
4. The number of animals shall not be increased above the maximum herd size stated in Finding 3 until the Discharger submits a new Report of Waste Discharge (ROWD) and the Regional Board has issued new Waste Discharge Requirements. The ROWD shall clearly demonstrate that the increase in animals will not constitute a threat to water quality.
5. The Discharger shall submit a complete Report of Waste Discharge in accordance with the California Water Code Section 13260 at least 140 days prior to any material change or proposed change in the character, location, or volume of the discharge, including any expansion of the facility or development of any treatment technology, or construction of an anaerobic digester.
6. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Board.
7. The Board will review this Order periodically and may revise requirements when necessary.
8. If site conditions threaten to violate Specification B.1 or Prohibition A.2, the Discharger shall take immediate action to preclude the violation, documenting the condition and all corrective actions. Such actions shall be summarized in the annual monitoring report. Alterations of the Waste Management Plan (see Required Reports and Notices F.1.b) for the production area to avoid a recurrence shall be submitted as a modification to the Waste Management Plan.
9. If a discharge of waste creates, or threatens to create, significant objectionable odors or nuisance odor and vector conditions, enforcement and/or revocation of coverage under this Order may result.

10. The Discharger shall comply with all requirements of this Order and all terms, conditions, and limitations specified by the Executive Officer.
11. Any instance of noncompliance with this Order constitutes a violation of the California Water Code and its regulations. Such noncompliance is grounds for enforcement action, and/or termination of the authorization to discharge.
12. The Discharger must maintain coverage under this Order or a subsequent revision to this Order until all manure, wastewater, and animal waste impacted soil, including soil within the storage lagoons, is disposed of or utilized in a manner which does not pose a threat to surface water or groundwater quality or create a condition of nuisance. At least 90 days before seeking to terminate coverage under this Order, the Discharger must submit to the Executive Officer a closure plan that ensures protection of surface water and groundwater. No more than 30 days after completion of site closure, the Discharger shall submit a closure report which documents that all closure activities were completed as proposed and approved in the closure plan. Coverage under this Order will not be terminated until cleanup is complete.
13. This Order shall become effective upon adoption by the Board.
14. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Board or court orders requiring corrective action or imposing civil monetary liability.
15. Technical reports required by this Order must be certified by an appropriately licensed professional as required in this Order and its Attachments. If the Executive Officer provides comments on any technical report, the Discharger will be required to address those comments.
16. The Discharger shall maintain a copy of this Order at the site so as to be available at all times to site-operating personnel. The Discharger, landowner and his/her designee shall be familiar with the content of this Order.

E. Permit Reopening, Revision, Revocation, and Re-Issuance

1. If more stringent applicable water quality standards are adopted in the Basin Plan, the Board may revise and modify this Order in accordance with such standards.
2. This Order may be reopened to address any changes in state plans, policies, or regulations that would affect the water quality requirements for the discharges and as authorized by state law.

F. Required Reports and Notices

- I. Dischargers must prepare and submit the following pursuant to Water Code Section 13267 in accordance with this Order:
 - a. The Discharger shall submit Annual Reports, Groundwater Reports, and Storm Water Reports as described in the Monitoring and Reporting Program.
 - b. **Waste Management Plan:** The Discharger has submitted a Waste Management Plan that describes and evaluates the facility's design, construction, operation, and maintenance for flood protection and waste containment. If, in the course of operation the Discharger or the Board determines that the design, construction, operation, and/or maintenance of the dairy facility is not protective of water quality, the Discharger must notify the Board and propose modifications and a schedule for modifications that will bring the dairy facility into compliance. Certification that the modifications have been implemented shall be submitted to the Executive Officer within 30 days of completion of the modifications.
 - c. **Nutrient Management Plan:** The Discharger has submitted a Certified Nutrient Management Plan that addresses the application of wastewater to land for nutrient recycling (See Attachment C). The Plan must be maintained at the dairy, submitted to the Executive Officer upon request and must ultimately provide for protection of both surface water and groundwater. The Nutrient Management Plan shall be updated as necessary or if the Executive Officer requests that additional information be included. Groundwater monitoring will be used to determine if implementation of the Nutrient Management Plan is protective of groundwater quality.
 - d. **Other Reports:** Prior to expanding beyond 3450 mature cows, Discharger will provide information regarding:
 - i. Documentation on the repair of Agricultural Well 5 (AW5) and the installation of double check valves to AW1 and AW2. These valves must provide backflow prevention that can be tested. All backflow prevention valves must be tested annually.

- ii. Documentation of the installation of the second flow meter on the west side of the new ponds.
 - iii. Documentation of the date that solid manure will no longer be applied on the fields. Certification will be verified by the Manure Manifests submitted with the annual reports.
 - iv. Documentation that the necessary modifications to the wastewater pipeline system is completed.
- e. By **1 October 2008**, the discharger shall submit a written work plan for a BPTC technical evaluation that sets forth a schedule for a systematic and comprehensive technical evaluation of the five wastewater lagoons (Ponds 1-5) to determine if the existing construction is protective of groundwater. The work plan shall contain a time schedule for completing the comprehensive technical evaluation. The schedule to complete the BOTC Technical Evaluation shall be as short as practicable, and shall not exceed two years. Upon written determination of adequacy of the technical report by the Executive Officer, the Provision shall be satisfied.
- f. **Salinity Report:** By **1 July 2009**, The Discharger shall submit a report that identifies sources of salt in waste generated at the dairy, evaluates measures that can be taken to minimize salt in the dairy waste, and includes a commitment to implement measures identified to minimize salt in the dairy waste. If a third party (for example, the California Dairy Quality Assurance Program) produces an industry-wide report that is acceptable to the Executive Officer, the Discharger may refer to that report rather than generating his own report, but must certify that the appropriate measures will be implemented to reduce salt in his dairy waste.

G. Reporting Provisions

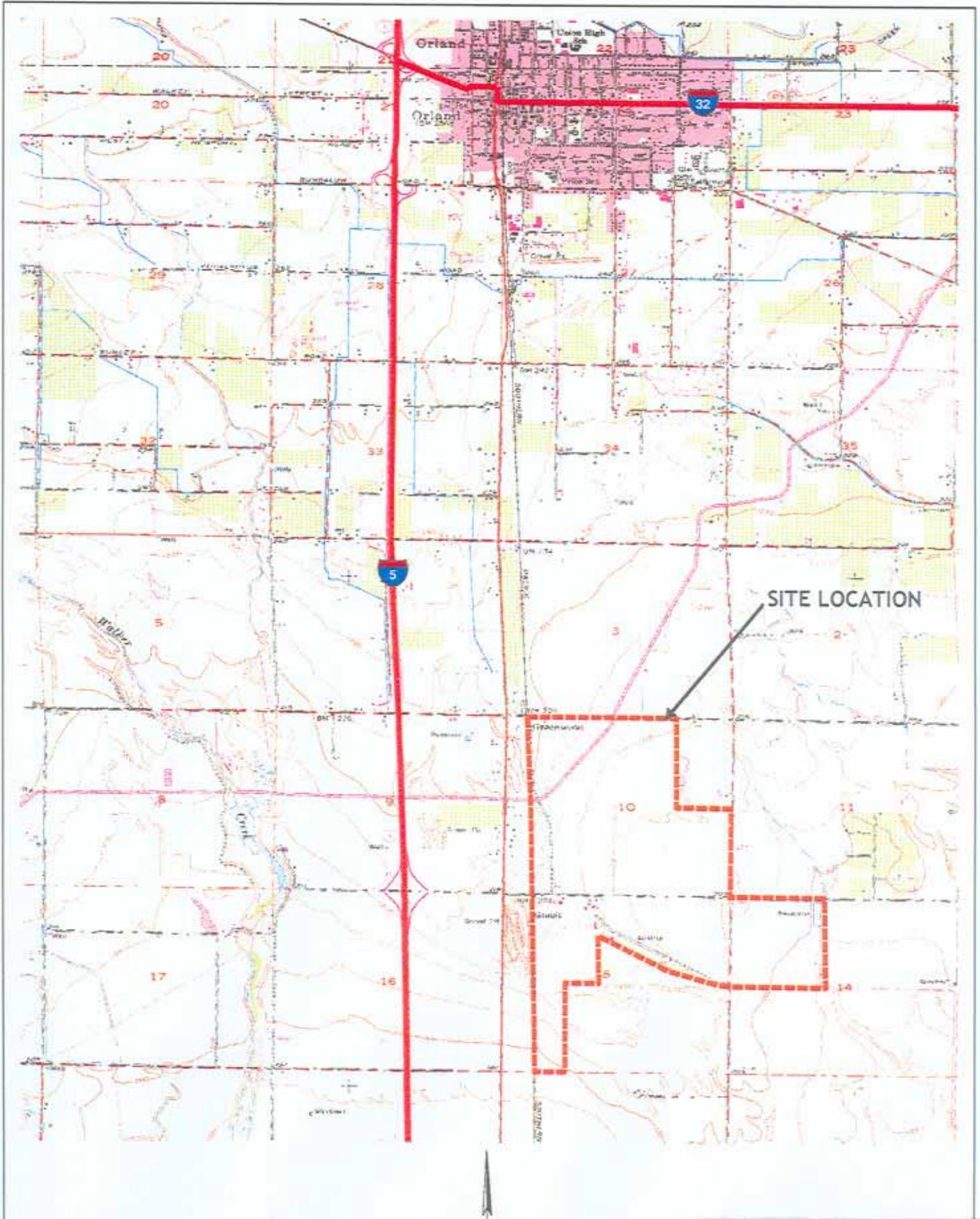
1. All annual reports or information submitted to the Board shall be signed and certified in accordance with C.7 and C.8 of the Standard Provisions.
2. The Discharger shall submit all reports as specified in the attached Monitoring and Reporting Program No. R5-2008-0122.
3. The Discharger shall furnish, within a reasonable time, any information the Board may request, to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Order. The Discharger shall, upon request, also furnish to the Board copies of records required to be kept by this Order.
4. All reports prepared and submitted to the Executive Officer in accordance with the terms of this Order shall be available for public inspection at the offices of the Board.

H. Record Keeping

The Discharger shall create, maintain for five years, and make available to the Board upon request by the Executive Officer any reports or records required by this Order including those required under Monitoring and Reporting Program No. R5-2008-0122.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 31 July 2008.

PAMELA C. CREEDON, Executive Officer



SITE LOCATION

VESTRA

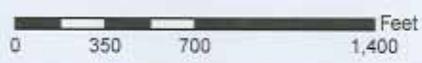
SOURCE: USGS ORLAND QUADRANGLE, 1978

P:\Projects\2004\70430 Greenwood Dairy\Figures\SiteLocation.mxd

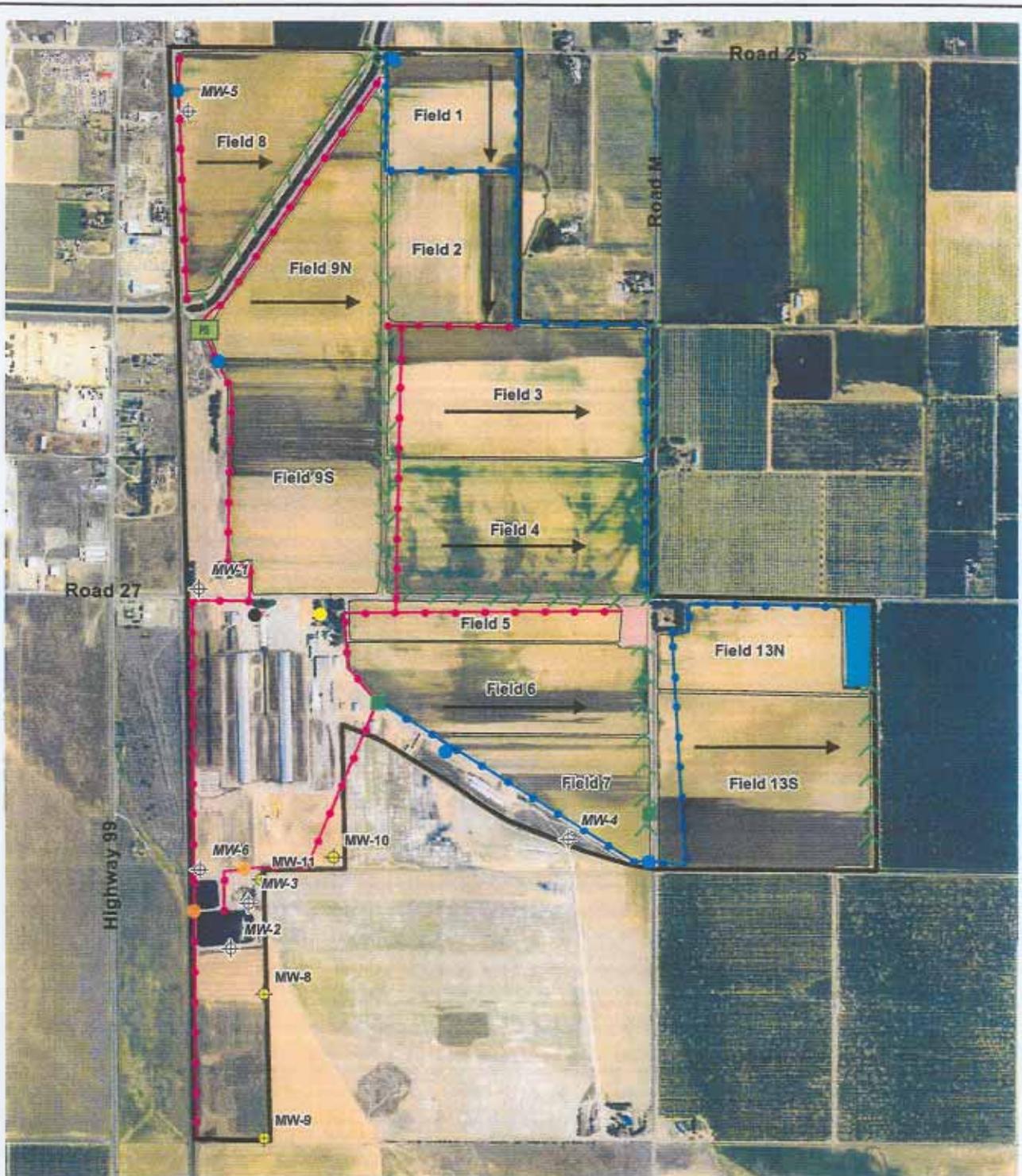
Attachment A – Topographic
 Map of Greenwood Dairy
 6569 County Road 27
 Orland, Glenn County
 Portions of Sections 10, 15,
 and 16 Township 21 North
 Range 3 West



- | | | | | |
|--------------------------------------|----------------|---------------------|------------------------------|----------------------------------|
| ◆ New Greenwood Monitoring Well | ▭ Barns | ▭ Shed | ▭ Original Ponds | ▭ Dry Cow Pens |
| ⊕ Existing Greenwood Monitoring Well | ▭ Calf Hutches | ▭ Silage Stack Area | ▭ 2006 Ponds | ▭ Irrigated Cropland and Pasture |
| ● Barn Well | ▭ Shades | ▭ Hay | ▭ Manure Drying and Storage | ▭ Tailwater Pond |
| ● Irrigation Well | ▭ Shop | ▭ Scale | ▭ Storm Water Retention Pond | ▭ Greenwood Dairy Boundary |
| ⊕ Fulbn Monitoring Wells | | | | |

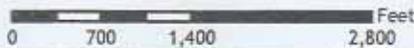


Attachment B1 – Aerial Map of Production Area Greenwood Dairy
 6569 County Road 27
 Orland, Glenn County
 Portions of Sections 10,15, and 16 Township 21 North Range 3 West



- | | | | | | |
|--|----------------------------|--|--------------------------|--|-----------------------------------|
| | Proposed Monitoring Wells | | Barn Well | | Field Drains |
| | Greenwood Monitoring Wells | | Domestic Well | | Field Boundary |
| | Flow Meter | | Irrigation Well | | Return Sump |
| | Mixing Box | | Waste Water Pipeline | | Future Tailwater Return Pond |
| | Lift Pump | | Fresh Water | | Greenwood Dairy Property Boundary |
| | | | Field Drainage Direction | | |

VESTRA
SOURCE: NAIP 2005



Attachment B2 – Aerial Map of Land Application Area Greenwood Dairy
6569 County Road 27
Orland, Glenn County
Portions of Sections 10,15, and 16 Township 21 North Range 3 West

ATTACHMENT C

Nutrient Management Plan Provisions And Technical Standards For Nutrient Management

Individual Waste Discharge Requirements Order No. R5-2008-0122 For Greenwood Dairy Glenn County

Owners and operators of milk cow dairies (Dischargers) who apply manure, bedding, or wastewater to land for nutrient recycling are required to develop and implement management practices that control nutrient losses and that are described in a Nutrient Management Plan (NMP). The purpose of the NMP is to budget and manage the nutrients applied to the land application area(s) considering all sources of nutrients, crop requirements, soil types, climate, and local conditions in order to prevent adverse impacts to surface water and groundwater quality. The NMP must take the site-specific conditions into consideration in identifying steps that will minimize nutrient movement through surface runoff or leaching past the root zone.

The Discharger has submitted a NMP, which contains the elements, listed below under Contents of a Nutrient Management Plan and is in conformance with the applicable Technical Standards for Nutrient Management (Technical Standards), also listed below. These provisions in the NMP must be updated as necessary in response to changing conditions, monitoring results and other factors. Implementation of the Nutrient Management Plan meets the requirements of Resolution No. 68-16.

Any revisions to the NMP must be developed and signed by a specialist who is certified in developing nutrient management plans. A certified specialist is a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy or a Technical Service Provider certified in nutrient management in California by the Natural Resources Conservation Service (NRCS). The Executive Officer may approve alternative proposed specialists. The NMP will only be considered certified if it is prepared and signed by one of these parties.

The NMP is linked to other sections of the WDRs. The Monitoring and Reporting Program specifies minimum amounts of monitoring that must be conducted at the dairy. As indicated below, this information must be used to make management decisions related to nutrient management and to determine if revisions to the NMP are needed. Likewise, the timing and amounts of wastewater applications to crops must be known to correctly calculate the amount of storage needed in holding ponds.

Wastes and land application areas shall be managed to prevent contamination of crops grown for human consumption. The term “crops grown for human consumption” refers only to crops that will not undergo subsequent processing which adequately removes potential microbial danger to consumers.

Contents of a Nutrient Management Plan

Dairy Facility Assessment

The NMP will include the annual Dairy Facility Assessments and the annual monitoring reports as required by Monitoring and Reporting Program No. R5-2008-0122. Copies of these assessments shall be maintained for 10 years.

The NMP identifies the name and address of the dairy, the dairy operator, and legal owner of the dairy property and contains all of the following elements to demonstrate that the Discharger can control nutrient losses that may impact surface water or groundwater quality and comply with the requirements of the Order and the Technical Standards for Nutrient Management (Technical Standards). These elements shall be updated as conditions change at the facility:

- I. Land Application Area Information
 - A. Identification of each land application area (under the Discharger’s control, whether it is owned, rented, or leased, to which manure or wastewater from the production area is or may be applied for nutrient recycling) on a single published base map (topographic map or aerial photo) at an appropriate scale which includes:
 1. A field identification system (Assessor’s Parcel Number); land application area by name or number; total acreage of each land application area; crops grown; indication if each land application area is owned, rented, or leased by the Discharger; indication what type of waste is applied (solid manure only, wastewater only, or both solid manure and wastewater); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tail water and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent) if installed; irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water to surface water from the field; and
 2. Wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals,

culverts, drainage controls (berms, levees, etc.), and drainage easements.

- B. Copies of written agreements with third parties that receive wastewater for their own use from the Discharger's dairy.
- C. Identification of each field that is both under the control of the Discharger and within five miles of the dairy where neither wastewater nor manure is applied. Each field shall be identified on a single published base map at an appropriate scale by the following:
 - 1. Assessor's Parcel Number.
 - 2. Total acreage.
 - 3. Information on who owns or leases the field.

Note: The NMP must be updated and the Regional Board notified in writing before waste is applied to the lands identified in this section.

II. Sampling and Analysis (see Technical Standard I below)

Identify the sampling methods, sampling frequency, and analyses to be conducted for soil, manure, wastewater, irrigation water, and plant tissue analysis (Technical Standard I below).

III. Nutrient Budget (see Technical Standard V below)

The NMP contains a nutrient budget for each land application area. The nutrient budget establishes planned rates of nutrient applications for each crop based on soil test results, manure and wastewater analyses, irrigation water analyses, crop nutrient requirements and patterns, seasonal and climatic conditions, the use and timing of irrigation water, and the nutrient application restrictions listed in Technical Standards V.A through V.D below. The Nutrient Budget includes the following:

- A. The rate of application and the basis for the application rate of manure and wastewater for each crop in each land application area (also considering sources of nutrients other than manure or wastewater) to meet each crop's needs without exceeding the application rates specified in Technical Standard V.B below.
- B. The timing of applications for each crop in each land application area and the basis for the timing (Technical Standard V.C below). The

maximum period of time anticipated between land application events (storage period) based on proper timing and compliance with Technical Standard V.C. below. .

- C. The method of manure and wastewater application for each crop in each land application area (Technical Standard V.D below).
 - D. If phosphorus and/or potassium applications exceed the amount of these elements removed from the land application area in the harvested portion of the crop, the soil and crop tissue analyses shall be reviewed by an agronomist at least every five years. If this review determines that the buildup of phosphorus or potassium threatens to reduce the long-term productivity of the soil or the yield, quality or use of the crops grown, application rates will be adjusted downward to prevent or correct the problem.
- IV. Setbacks, Buffers, and Other Alternatives to Protect Surface Water (see Technical Standard VII below)
- A. Identify all potential surface waters or conduits to surface water that are within 100 feet of any land application area.
 - B. For each land application area that is within 100 feet of a surface water or a conduit to surface water, identify the setback, vegetated buffer, or other alternative practice that will be implemented to protect surface water (Technical Standard VII below).
- V. Field Risk Assessment (see Technical Standard VIII below)
- Evaluate the effectiveness of management practices used to control the discharge of waste constituents from land application areas using the water quality monitoring results.
- VI. Record-Keeping (see Technical Standard IX below)
- Identify the records that will be maintained for each land application area identified in I.A above.
- VII. Nutrient Management Plan Review (see Technical Standard X below)
- A. Identify the schedule for review and revisions to the NMP.
 - B. Identify the person who will conduct the NMP review and revisions.

Technical Standards for Nutrient Management

The Discharger shall comply with the following Technical Standards for Nutrient Management in the implementation of the Nutrient Management Plan (NMP).

I. Sampling and Analysis

Soil, manure, wastewater, irrigation water, and plant tissue shall be monitored, sampled, and analyzed as required in Monitoring and Reporting Program No. R5-2008-0122, and any future revisions thereto. The results of these analyses shall be used during the implementation of the NMP.

II. Crop Requirements

- A. Realistic yield goals for each crop in each land application area shall be established. For new crops or varieties, industry yield recommendations may be used until documented yield information is available.
- B. Each crop's nutrient requirements for nitrogen, phosphorus, and potassium shall be determined based on recommendations from the University of California, *Western Fertilizer Handbook* (9th Edition), or from historic crop nutrient removal.

III. Available Nutrients

- A. All sources of nutrients (nitrogen, phosphorus, and potassium) available for each crop in each land application area shall be identified prior to land applications. Potential nutrient sources include, but are not limited to, manure, wastewater, irrigation water, commercial fertilizers, soil, and previous crops.
- B. Nutrient values of soil, manure, wastewater, and irrigation water shall be determined based on laboratory analysis. "Book values" for manure and wastewater may be used for planning of waste applications during the first two years during initial implementation of the NMP if necessary. Acceptable book values are those values recognized by American Society of Agricultural and Biological Engineers (ASABE), the NRCS, and/or the University of California that accurately estimate the nutrient content of the material. The nutrient content of commercial fertilizers shall be derived from California Department of Food and Agriculture published values.

- C. Nutrient credit from previous legume crops shall be determined by methods acceptable to the University of California Cooperative Extension, the Natural Resources Conservation Service (NRCS), or a specialist certified in developing nutrient management plans.

IV. Overall Nutrient Balance

If the NMP shows that the nutrients generated by the dairy exceed the amount needed for crop production in the land application area, the Discharger must implement management practices (such as offsite removal of the excess nutrients, treatment, or storage) that will prevent impacts to surface water or groundwater quality due to excess nutrients.

V. Nutrient Budget

The NMP's nutrient budget includes planned rates of nutrient applications for each crop that do not exceed the crop's requirements for total nitrogen considering the stage of crop growth and that also considers all nutrient sources, climatic conditions, the irrigation schedule, and the application limitations in the Order, and A through D below.

A. General Standards for Nutrient Applications

1. Plans for nutrient management shall specify the form, source, amount, timing, and method of application of nutrients on each land application area to minimize nitrogen and/or phosphorus movement to surface and/or ground waters to the extent necessary to meet the provisions of the Order.
2. Where crop material is not removed from the land application area, waste applications are not allowed. For example, if a pasture is not grazed or mowed (and cuttings removed from the land application area), waste shall not be applied to the pasture.
3. Manure and/or wastewater will be applied to the land application area for use by the first crop covered by the NMP only to the extent that soil tests indicate a need for nitrogen application.
4. Supplementary commercial fertilizer(s) and/or soil amendments may be added when the application of nutrients contained in manure and/or wastewater alone is not sufficient to meet the crop needs, as long as these applications do not exceed provisions of the Order.

5. Nutrient applications to a crop shall not be made prior to the harvest of the previous crop except where the reason for such applications is provided in the NMP.
6. Water applications shall not exceed the amount needed for efficient crop production.
7. Nutrients shall be applied in such a manner as not to degrade the soil's structure, chemical properties, or biological condition.

B. Nutrient Application Rates

1. General

- a. Planned rates of nutrient application shall be determined based on soil test results, crop tissue test results, nutrient credits, manure and wastewater analysis, crop requirements and growth stage, seasonal and climatic conditions, and use and timing of irrigation water. Actual applications of nitrogen to any crop shall be limited to the amounts specified below.
- b. Nutrient application rates shall not attempt to approach a site's maximum ability to contain one or more nutrients through soil adsorption. Excess applications or applications that cause soil imbalances should be avoided. Excess manure nutrients generated by the Discharger must be handled by export to a good steward of the manure, or the development of alternative uses.

2. Nitrogen

- a. Total nitrogen applications to a land application area prior to and during the growing of a crop will be based on pre-plant or pre-side dress soil analysis to establish residual nitrogen remaining in the field from the previous crop to establish early season nitrogen applications. Pre-plant or side dress nitrogen applications will not exceed the estimated total crop use as established by the nutrient management plan. Except as allowed below, application rates shall not result in total nitrogen applied to the land application areas exceeding 1.4 times the nitrogen that will be removed from the field in the harvested portion of the crop. At no time will application rates result in total nitrogen applied to the land application

areas exceeding 1.65 times the nitrogen that will be removed from the field in the harvested portion of the crop.

Additional applications of nitrogen, up to the 1.65 figure, are allowable if the following conditions are met:

- i. Plant tissue testing has been conducted and it indicates that additional nitrogen is required to obtain a crop yield typical for the soils and other local conditions;
- ii. The amount of additional nitrogen applied is based on the plant tissue testing and is consistent with University of California Cooperative Extension written guidelines or written recommendations from a professional agronomist;
- iii. The form, timing, and method of application facilitates timely nitrogen availability to the crop; and
- iv. Records are maintained documenting the need for additional applications.

3. Phosphorus and Potassium

Phosphorus and potassium may be applied in excess of crop uptake rates. If, however, monitoring indicates that levels of these elements are causing adverse impacts, corrective action must be taken. Cessation of applications may be necessary until crop uptake and harvest has reduced the concentration in the soil.

C. Nutrient Application Timing

1. Wastewater application is not the same as irrigation. Wastewater application scheduling should be based on the nutrient needs of the crop, the daily water use of the crop, the water holding capacity of the soil, and the lower limit of soil moisture for each crop and soil.
2. Wastewater shall not be applied when soils are saturated. During the rainy season rainfall can exceed crop water demand. However, the application of wastewater is allowable if tests show that there is an agronomic need and current conditions indicate that threat of nitrate leaching is minimal.

3. The timing of nutrient application must correspond as closely as possible with plant nutrient uptake characteristics, while considering cropping system limitations, weather and climatic conditions, and land application area accessibility.
4. Nutrient applications for spring-seeded crops shall be timed to avoid surface runoff and leaching by winter rainfall.
5. Except for orchards and vineyards, nutrients shall not be applied during periods when a crop is dormant.

D. Nutrient Application Methods

The Discharger shall apply nutrient materials uniformly to application areas or as prescribed by precision agricultural techniques.

VI. Wastewater Management on Land Application Areas

Control of water and wastewater applications and runoff is a part of proper nutrient management since water transports nutrients, salts, and other constituents from cropland to groundwater and surface water. The Discharger shall comply with the provisions of the Order that place requirements on applications of manure and wastewater to, and runoff from, cropland.

VII. Setbacks and Vegetated Buffer

- A. A setback is a specified distance from surface waters or potential conduits to surface waters where manure and wastewater may not be land applied, but where crops may continue to be grown.
- B. A vegetated buffer is a narrow, permanent strip of dense perennial vegetation where no crops are grown and which is established parallel to the contours of and perpendicular to the dominant slope of the land application area for the purposes of slowing water runoff, enhancing water infiltration, trapping pollutants bound to sediment, and minimizing the risk of any potential nutrients or pollutants from leaving the land application area and reaching surface waters.
- C. Practices and management activities for vegetated buffers include the following:

1. Removal of vegetation in vegetated buffers will be in accordance with site production limitations, rate of plant growth, and the physiological needs of the plants.
2. Do not mow below the recommended height for the plant species.
3. Maintain adequate ground cover and plant density to maintain or improve filtering capacity of the vegetation
4. Maintain adequate ground cover, litter, and canopy to maintain or improve infiltration and soil condition.
5. Periodic rest from mechanical harvesting may be needed to maintain or restore the desired plant community following episodic events such as drought.
6. When weeds are a significant problem, implement pest management to protect the desired plant communities.
7. Prevent channels from forming.

VIII. Field Risk Assessment

The results of the Storm Water Monitoring for each land application area required by Monitoring and Reporting Program No. R5-2008-0122 shall be used by the Discharger to assess the movement of nitrogen and phosphorus from each land application area where manure and/or wastewater is applied. The Discharger will follow guidelines provided by the Regional Board in conducting these assessments.

IX. Record-Keeping

The Discharger shall maintain records for each land application area as required in the Record-Keeping Requirements of Monitoring and Reporting Program No. R5-2008-0122.

X. Nutrient Management Plan Review

- A. The NMP shall be updated when discharges from any land application area exceed water quality objectives, a nutrient source has changed, site-specific information has become available to replace default values used in the overall nutrient balance or the nutrient budget, or nitrogen application rates in any land application area exceed the rates specified in Technical Standard V.B.

- B. The NMP shall be updated prior to any anticipated changes that would affect the overall nutrient balance or the nutrient budget such as, but not limited to, a crop rotation change, changes in the available cropland, or the changes in the volume of wastewater generated.
- C. The Discharger shall review the NMP at least once every five years and notify the Regional Board in the annual report of any proposed changes that would affect the NMP.

ATTACHMENT D

Manure/Wastewater Tracking Manifest For Greenwood Dairy, Glenn County

Instructions:

- 1) Complete one manifest for each hauling event, for each destination. A hauling event may last for several days, as long as the manure is being hauled to the same destination.
- 2) If there are multiple destinations, **complete a separate form for each destination.**
- 3) The operator must obtain the signature of the hauler upon completion of each manure-hauling event.
- 4) The operator shall submit copies of manure/process wastewater tracking manifest(s) with the Annual Monitoring Report.

Operator Information:

Name of Operator: Daniel Vander Dussen

Name of Dairy Facility: Greenwood Dairy

Facility Address: 6569 County Road 27, Orland, CA 95963

Contact Person Name and Phone Number:

Name

Phone Number

Manure/Wastewater Hauler Information:

Name of Hauling Company and Contact Person:

Hauling Company

Number and Street

City

Zip Code

Contact Person

Phone Number

Destination Information:

Composting Facility / Broker / Farmer / Other (identify) _____ (please circle one)

Destination Address or Assessor's Parcel Number:

| | | | |
|-------------------|------|----------|--------------------------|
| Number and Street | City | Zip Code | Assessor's Parcel Number |
|-------------------|------|----------|--------------------------|

Contact information of party that receives the manure or wastewater:

Name of Company (if applicable): _____

Contact Person: _____

Mailing Address: _____

| | | |
|-------------------|------|----------|
| Number and Street | City | Zip Code |
|-------------------|------|----------|

Phone Number: _____

Dates Hauled: _____

Amount Hauled:

Enter the amount of manure hauled in tons or cubic yards (indicate the units used), the manure solids content (if amount reported in tons) or manure density (if amount reported in cubic yards), and the method used to calculate the amount:

Manure: _____ Tons or Cubic Yards (indicate which units used)

Manure Solids Content (if amount reported in tons): _____

Manure Density (if amount reported in cubic yards): _____

Method used to determine amount of manure: _____

Enter the amount of wastewater hauled in gallons and the method used to determine the amount.

Wastewater: _____ Gallons

Method used to determine volume of wastewater: _____

Written Agreement:

Does the Operator have a written agreement (in compliance with Land Application Specification 22 of Waste Discharge Requirements Order No. _____) with any party that receives wastewater from the Operator for its own use? (Please check one)

_____ Yes _____ No

Certification:

I declare under the penalty of law that I personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Operator's Signature: _____ Date: _____

Hauler's Signature: _____ Date: _____

ATTACHMENT E

Monitoring Well Installation And Sampling Plan And Monitoring Well Installation Completion Report For Dairies with Individual Waste Discharge Requirements In the Sacramento and San Joaquin River Basins August 2007

A Monitoring Well Installation and Sampling Plan (MWISP) must be submitted by the Discharger prior to installation of groundwater monitoring wells. At a minimum, the MWISP must contain all of the information listed below. Wells may be installed after the Executive Officer notifies the Discharger in writing that the MWISP is acceptable. The Order also requires the Discharger to submit a Monitoring Well Installation Completion Report (MWICR) within 45 days after completion of any monitoring well. At a minimum, the MWICR must summarize the field activities, as described below. All plans and reports must be signed and stamped by a California Registered Geologist, Certified Engineering Geologist, or Professional Engineer with experience in hydrogeology.

General Requirements

1. The Discharger shall install sufficient monitoring wells to:
 - a. Characterize groundwater flow direction and gradient beneath the site;
 - b. Characterize natural background (unaffected by the Discharger or others) groundwater quality upgradient of the facility; and
 - c. Characterize groundwater quality downgradient of the corrals, downgradient of the retention ponds, and downgradient of the land application areas.
2. It may be necessary to install more than one upgradient monitoring well (i.e., for the production area and the land application area). The Executive Officer may order more extensive monitoring based on site-specific conditions.
3. Prior to installation of additional monitoring wells, the Discharger shall submit to the Executive Officer a Monitoring Well Installation and Sampling Plan (MWISP) (see Attachment D) and schedule prepared under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology. Installation of monitoring wells shall not begin until the Executive Officer notifies the Discharger in writing that the MWISP is acceptable.
4. All monitoring wells shall be constructed in a manner that maintains the integrity of the monitoring well borehole and prevents the well from acting as a conduit for pollutant/contaminant transport. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples of the first encountered groundwater.

Monitoring Well Installation and Sampling Plan and Monitoring Well Installation Completion Report For Dairies with Individual Waste Discharge Requirements in the Sacramento and San Joaquin River Basins

5. The construction and destruction of monitoring wells and supply wells shall be in accordance with the standards under *Water Wells* and *Monitoring Wells* in the *California Well Standards Bulletin 74-90 (June 1991)* and *Bulletin 74-81 (December 1981)*, adopted by the Department of Water Resources (DWR). Should any county or local agency adopt more stringent standards than that adopted by the DWR, then these local standards shall supercede the Well Standard of DWR, and the Discharger shall comply with the more stringent standards.
6. The horizontal and vertical position of each monitoring well shall be determined by a registered land surveyor or other qualified professional. The horizontal position of each monitoring well shall be measured with one-foot lateral accuracy using the North American Datum 1983 (NAD83 datum). The vertical elevations of each monitoring well shall be referenced to the North American Vertical Datum 1988 (NAVD88 datum) to an absolute accuracy of at least 0.5 feet and a relative accuracy between monitoring wells of 0.01 feet.
7. Within 45 days after completion of any monitoring well, the Discharger shall submit to the Executive Officer a Monitoring Well Installation Completion Report (MWICR) (see Attachment D) prepared under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology.
8. Groundwater samples from monitoring wells shall be collected as specified in an approved Monitoring Well Installation and Sampling Plan.

Monitoring Well Installation and Sampling Plan

At a minimum, the MWISP must contain all of the information listed below.

A. General Information:

1. Topographic map showing any existing nearby (about 2000 feet) domestic, irrigation, and municipal supply wells and monitoring wells, utilities, surface water bodies, drainage courses and their tributaries/destinations, and other major physical and man-made features, as appropriate.
2. Site plan showing proposed well locations, other existing wells, unused and/or abandoned wells, major physical site structures (such as corrals, freestall barns, milking barns, feed storage areas, etc.), waste handling facilities (including solid separation basins, retention ponds, manure storage areas), irrigated cropland and pasture, and on-site surface water features.

Monitoring Well Installation and Sampling Plan and Monitoring Well Installation Completion Report For Dairies with Individual Waste Discharge Requirements in the Sacramento and San Joaquin River Basins

3. Rationale for the number of proposed monitoring wells, their locations and depths, and identification of anticipated depth to groundwater.
4. Local permitting information (as required for drilling, well seals, boring/well abandonment).
5. Drilling details, including methods and types of equipment for drilling and logging activities. Equipment decontamination procedures (as appropriate) should be described.
6. Health and Safety Plan.

B. Proposed Drilling Details:

1. Drilling techniques
2. Well logging method

C. Proposed Monitoring Well Design: All proposed well construction information must be displayed on a construction diagram or schematic to identify the following:

1. Well depth
2. Borehole depth and diameter
3. Well construction materials
4. Casing material and diameter – include conductor casing, if appropriate
5. Location and length of perforation interval, size of perforations, and rationale
6. Location and thickness of filter pack, type and size of filter pack material, and rationale
7. Location and thickness of bentonite seal
8. Location, thickness, and type of annular seal
9. Surface seal depth and material
10. Type of well cap(s)
11. Type of well surface completion
12. Well protection devices (such as below-grade water tight-vaults, locking steel monument, bollards, etc.)

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D. Proposed Monitoring Well Development:

1. Schedule for development (at least seven days after well completion)
2. Method of development
3. Method of determining when development is complete
4. Parameters to be monitored during development
5. Method for storage and disposal of development water

E. Proposed Surveying:

1. How horizontal and vertical position of each monitoring well will be determined
2. The accuracy of horizontal and vertical measurements to be obtained
3. The California licensed professional (licensed land surveyor or civil engineer) to perform the survey

F. Proposed Groundwater Monitoring:

1. Schedule (at least 48 hours after well development)
2. Depth to groundwater measuring equipment (e.g., electric sounder or chalked tape capable of ± 0.01 -foot measurements)
3. Well purging method, equipment, and amount of purge water
4. Sample collection (e.g., bottles and preservation methods), handling procedures, and holding times
5. Quality assurance/quality control (QA/QC) procedures (as appropriate)
6. Analytical procedures
7. Equipment decontamination procedures (as appropriate)

G. Proposed Schedule:

1. Fieldwork
2. Laboratory analyses

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3. Report submittal

Monitoring Well Installation Completion Report

At a minimum, the MWICR shall summarize the field activities as described below.

A. General Information:

1. Brief overview of field activities including well installation summary (such as number, depths), and description and resolution of difficulties encountered during field program.
2. Topographic map showing any existing nearby domestic, irrigation, and municipal supply wells and monitoring wells, utilities, surface water bodies, drainage courses and their tributaries/destinations, and other major physical and man-made features.
3. Site plan showing monitoring well locations, other existing wells, unused and/or abandoned wells, major physical site structures (such as corrals, freestall barns, milking barns, feed storage areas, etc.), waste handling facilities (including solid separation basins, retention ponds, manure storage areas), land application area(s), and on-site surface water features.
4. Period of field activities and milestone events (e.g., distinguish between dates of well installation, development, and sampling)

B. Monitoring Well Construction:

1. Number and depths of monitoring wells installed
2. Monitoring well identification (i.e., numbers)
3. Date(s) of drilling and well installation
4. Description of monitoring well locations including field-implemented changes (from proposed locations) due to physical obstacles or safety hazards
5. Description of drilling and construction, including equipment, methods, and difficulties encountered (such as hole collapse, lost circulation, need for fishing)
6. Name of drilling company, driller, and logger (site geologist to be identified)
7. Driller's/Lithologic log
8. As-builts for each monitoring well with the following details:

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- a. Well identification
 - b. Total borehole and well depth
 - c. Date of installation
 - d. Boring diameter
 - e. Casing material and diameter (include conductor casing, if appropriate)
 - f. Location and thickness of slotted casing, perforation size
 - g. Location, thickness, type, and size of filter pack
 - h. Location and thickness of bentonite seal
 - i. Location, thickness, and type of annular seal
 - j. Depth of surface seal
 - k. Type of well cap
 - l. Type of surface completion
 - m. Depth to water (note any rises in water level from initial measurement) and date of measurement
 - n. Well elevation (measuring point to nearest ± 0.01 foot) at top of casing
 - o. Well protection device (such as below-grade water tight vaults, stovepipe, bollards, etc)
9. All depth to groundwater measurements during field program
10. Field notes from drilling, installation, and surveying activities (e.g., all subcontractor dailies, as appropriate)
11. Construction summary table of pertinent information such as date of installation, well depth, casing diameter, screen interval, bentonite seal interval, and well elevation
- C. Monitoring Well Development:
1. Date(s) and time of development
 2. Name of developer
 3. Method of development
 4. Methods used to identify completion of development
 5. Development log: volume of water purged and measurements of temperature, pH and electrical conductivity during and after development
 6. Disposal of development water
 7. Field notes (such a bailing to dryness, recovery time, number of development cycles)

Monitoring Well Installation and Sampling Plan and Monitoring Well Installation Completion
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San Joaquin River Basins

D. Monitoring Well Survey

1. Identify coordinate system or reference points used
2. Description of measuring points (i.e. ground surface, top of casing, etc.)
3. Horizontal and vertical coordinates of well casing with cap removed
4. Name, license number, and signature of California licensed professional who conducted survey
5. Surveyor's field notes
6. Tabulated survey data

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0122

INDIVIDUAL WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2008-0122
FOR
GREENWOOD DAIRY
COUNTY ROAD 27, ORLAND
GLENN COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code (CWC) Section 13267. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

This MRP includes Monitoring, Record-Keeping, and Reporting requirements. Monitoring requirements include monitoring of discharges of storm water and groundwater monitoring in order to determine if the Discharger's dairy is in compliance with the discharge limitations of Waste Discharge Requirements Order No. R5-2008-0122 (Order).

Monitoring requirements also include monitoring of nutrients applied to, and removed from, land application areas in order for the Discharger to implement a Nutrient Management Plan that will minimize leaching of nutrients and salts to groundwater and transport of these constituents to surface water.

In addition, monitoring requirements include periodic visual inspections of the dairy to ensure the dairy is being operated and maintained to ensure continued compliance with the Order.

This MRP requires the Discharger to keep and maintain records for five years of the monitoring activities for the production and land application areas and to prepare and submit reports containing the results of specified monitoring as indicated below.

Except where indicated, all monitoring must begin immediately. Note that some types of events require that a report be submitted to the Central Valley Water Board within 24 hours (see Section C).

The Discharger must follow sampling and analytical procedures approved by the Executive Officer. Approved procedures will be posted on the Board's web site and copies may be obtained by contacting staff. The Discharger may submit alternative procedures for consideration, but must receive written approval from the Executive Officer before using them.

The Discharger shall conduct monitoring, record-keeping, and reporting as specified below.

A. MONITORING REQUIREMENTS

Visual Inspections

Effective immediately, the Discharger shall conduct and record the inspections specified in Table 1 below and maintain records of the results on-site for a period of five years.

| Table 1. INSPECTIONS |
|---|
| <p><i>Production Area</i> <u>Weekly during the wet season (1 October to 31 May) and monthly between 1 June and 30 September:</u> Inspect all waste storage areas and note any conditions or changes that could result in discharges to surface water and/or from property under control of the Discharger.</p> <p>Note whether freeboard within each liquid storage structure is less than, equal to, or greater than the minimum two feet required.</p> <p><u>During and after each significant storm event¹:</u> Visual inspections of storm water containment structures for discharge, freeboard, berm integrity, cracking, slumping, erosion, excess vegetation, animal burrows, and seepage.</p> <p><u>Monthly on the 1st day of each month:</u> Photograph each pond showing the current freeboard on that date. All photos shall be dated and maintained as part of the discharger's record.</p> |
| <p><i>Land Application Areas</i> <u>Immediately before each wastewater application begins:</u> Inspect the land application area and note the condition of land application berms including rodent holes, piping, and bank erosion. Verify that any field valves are correctly set to preclude off-property or accidental discharges of wastewater.</p> <p><u>Daily when wastewater is being applied:</u> Inspect the land application area and note the condition of land application berms including rodent holes, piping, and bank erosion; the presence (or lack) of field saturation, ponding, erosion, runoff (including tailwater discharges from the end of fields, pipes, or other conveyances), and nuisance conditions; and the conditions of any vegetated buffers or alternative conservation practices.</p> |

Nutrient Monitoring

The Discharger shall monitor wastewater, manure, and plant tissue produced at the facility, soil in each land application area, and irrigation water used on each land application area for the constituents and at the frequency as specified in Table

¹ A significant storm event is defined as a storm event that results in continuous runoff of storm water for a minimum of one hour, or intermittent runoff for a minimum of three hours in a 12-hour period.

2 below. This monitoring is for nutrient management, shall begin when the Order is adopted, and will be used to refine the Nutrient Management Plan. The Discharger is encouraged to collect and use additional data, as necessary, to refine nutrient management.

| Table 2. NUTRIENT MONITORING |
|--|
| <p>Wastewater</p> <p><u>Each application:</u> Record the volume (gallons or acre-inches) and date of wastewater application to each land application area.</p> <p><u>Quarterly during one application event:</u> Field measurement of electrical conductivity.</p> <p>Laboratory analyses for nitrate-nitrogen (only when retention pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, potassium, and total dissolved solids.</p> <p><u>Annually for the first two years of operation:</u> Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride).</p> |
| <p>Manure</p> <p><u>Each application to each land application area:</u> Record the total volume (cubic yards) applied and density (grams per liter) or total weight (tons) applied and percent moisture</p> <p><u>Once within 12 months:</u> Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride).</p> <p><u>Twice per year:</u> Laboratory analyses for total nitrogen, total phosphorus, potassium, total dissolved solids and density (if volume manure applied is reported) or percent moisture (if weight manure applied is reported).</p> <p><u>Each offsite export of manure:</u> Record the total volume (cubic yards) exported and density (grams per liter) or total weight (tons) exported and percent moisture.</p> <p>Laboratory analyses for density (if volume manure exported is reported) or percent moisture (if weight manure exported is reported).</p> <p><u>Annually:</u> Record the total dry weight (tons) of manure applied annually to each land application area-and the total dry weight (tons) of manure exported offsite.</p> |
| <p>Plant Tissue</p> <p><u>At harvest:</u> Record the total weight (tons) and percent wet weight or volume (cubic yards) and density (grams per liter) of harvested material removed from each land application area.</p> <p>Laboratory analyses for total nitrogen, phosphorus, and potassium (expressed on a dry weight basis), and percent wet weight (if weight of harvested material is reported) or density (if volume of harvested material is reported).</p> |

| Table 2. NUTRIENT MONITORING |
|---|
| <p>The following test is only required if the Discharger wants to add fertilizer in excess of 1.4 times the nitrogen expected to be removed by the harvested portion of the crop (See Attachment C for details): Mid-season, if necessary to assess the need for additional nitrogen fertilizer during the growing season.</p> <p>Laboratory analyses for total nitrogen, expressed on a dry weight basis.</p> |
| <p>Soil <u>Beginning in the summer of 2008 and then once every 5 years from each land application area:</u> Laboratory analyses for: Total phosphorus</p> <p><i>The following soil tests are recommended but not required:</i> <u>Spring pre-plant for each crop:</u> Laboratory analyses for: 0 to 1 foot depth: Nitrate-nitrogen and organic matter. 1 to 2 foot depth: Nitrate-nitrogen.</p> <p><u>Fall pre-plant for each crop:</u> Laboratory analyses for: 0 to 1 foot: Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium and organic matter. 1 to 2 foot: Nitrate-nitrogen. 2 to 3 foot: Nitrate-nitrogen.</p> |
| <p><i>Irrigation Water</i>² <u>Each irrigation event for each land application area:</u> Record volume (gallons or acre-inches) and source (well or canal) of irrigation water applied and dates applied.</p> <p><u>One irrigation event during each irrigation season during actual irrigation events:</u> For each irrigation water source (well and canal): Electrical conductivity and total nitrogen.³ Data collected to satisfy the groundwater monitoring requirements (below) will satisfy this requirement if the irrigation water source is local groundwater.</p> |

Monitoring of Surface Runoff

The Discharger shall monitor discharges of storm water from the land application area for the constituents and at the frequency as specified in Table 3 below.

| Table 3. DISCHARGE MONITORING |
|--|
| <i>Storm Water Discharges to Surface Water from Each Land Application Area</i> ⁴ |

² The Discharger shall monitor irrigation water (from each water well source and canal) that is used on all land application areas.

³ In lieu of sampling the irrigation water, the Discharger may provide equivalent data from the local irrigation district. The results of the initial chemical testing of the irrigation water shall be included in the initial annual report as specified in the Annual Reporting section under Reporting Requirements C, below. The Discharger may propose in the annual report to reduce the constituents and/or sampling frequency of irrigation water based on the previous year's data.

⁴ Sample locations must be chosen such that the samples are representative of the quality and quantity of storm water discharged.

| Table 3. DISCHARGE MONITORING |
|---|
| <p>First storm event of the wet season⁵ and during peak storm season (typically February)⁶ each year from one third of the land application areas⁷ with the land application areas sampled rotated each year⁸:</p> <p>Record date, time, approximate volume, duration, location, and ultimate destination of the discharge.</p> <p>Field measurements of the discharge for electrical conductivity, temperature, pH, total ammonia-nitrogen, and unionized ammonia-nitrogen.</p> <p>Laboratory analyses of the discharge for nitrate-nitrogen, phosphorus, turbidity, and total and fecal coliform.</p> |

1. If conditions are not safe for sampling, the Discharger must provide documentation of why samples could not be collected and analyzed. For example, the Discharger may be unable to collect samples during dangerous weather conditions (such as local flooding, high winds, tornados, electrical storms, etc.). However, once the dangerous conditions have passed, the Discharger shall collect a sample of the discharge or, if the discharge has ceased, from the waste management unit from which the discharge occurred.
2. Sample analyses shall be conducted by a laboratory certified for such analyses by the California Department of Health Services. These laboratory analyses shall be conducted in accordance with the Title 40 Code of Federal Regulations Part 136 (*Guidelines Establishing Test Procedures for the Analysis of Pollutants*) or other test methods approved by the Executive Officer.
3. The rationale for all discharge sampling locations shall be included in the Storm Water Report.
4. Manure, wastewater, tailwater, or storm water shall not be discharged from the production area, and manure, tailwater, or wastewater shall not be discharged from the land application area. If there is any discharge from the production area, or any discharge of manure, tailwater or wastewater from the land application area, the discharge shall be reported and measured pursuant to the Priority Reporting of Significant Events requirements (See Reporting Requirements C, below)

⁵ This sample shall be taken from the first storm event of the season that produces significant storm water discharge such as would occur during continuous storm water runoff for a minimum of one hour, or intermittent storm water runoff for a minimum of three hours in a 12-hour period.

⁶ This sample shall be taken during a storm event that produces significant storm water discharge and that is preceded by at least three days of dry weather. The sample shall be taken during the first hour of the discharge.

⁷ One land application area shall be sampled for Dischargers that have one to three land application areas, two land application areas shall be sampled for Dischargers that have four to six land application areas, etc.

⁸ The Discharger may propose in the annual storm water report to reduce the constituents and/or sampling frequency of storm water discharges to surface water from any land application area based on the previous year's data (see Storm Water Reporting below).

Groundwater Monitoring

The Discharger shall sample the two domestic and five agricultural supply wells, and the ten monitoring wells to characterize existing groundwater quality. This monitoring shall be conducted at the frequency and for the parameters specified in Table 4 below.

| Table 4. GROUNDWATER MONITORING |
|--|
| <p><i>Domestic and Agricultural Supply Wells</i> <u>Semiannually at time of expected highest and lowest water table levels:</u> Field measurements of electrical conductivity. Laboratory analyses of nitrate-nitrogen.</p> <p><u>Annually:</u> Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride) , ammonium-nitrogen, total dissolved solids, and fecal coliform.</p> |
| <p><i>Monitoring Wells</i> <u>Semiannually at time of expected highest and lowest water table levels:</u> Field measurements of electrical conductivity and pH. Laboratory analyses for nitrate-nitrogen, ammonium-nitrogen, total dissolved solids, fecal coliform, phosphorus, and potassium.</p> <p><u>Annually:</u> Laboratory analyses for general minerals (calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride).</p> |

1. Groundwater samples from domestic wells shall be collected from the tap nearest to the pressure tank (and before the pressure tank if possible) after water has been pumped from this tap for 10 to 20 minutes. Groundwater samples from agricultural supply wells shall be collected after the pump has run for a minimum of 30 minutes or after at least three well volumes have been purged from the well.
2. Prior to any pre-sample purging, the depth of groundwater shall be measured from a surveyed reference point to the nearest 0.01 foot in each well.
3. Monitoring of the domestic and agricultural supply wells may be reduced after one year of data are provided to the Executive Officer.
4. Constituents analyzed in the monitoring wells may be reduced after two rounds of samplings have been completed and the results provided to the Executive Officer.
5. Prior to installation of additional monitoring wells, the Discharger shall submit to the Executive Officer a Monitoring Well Installation and Sampling Plan (MWISP) (see Attachment E) and schedule prepared under the direct supervision of, and certified by, a California registered civil engineer or a

California registered geologist with experience in hydrogeology. Installation of monitoring wells shall not begin until the Executive Officer notifies the Discharger in writing that the MWISP is acceptable

6. Within 45 days after completion of any monitoring well, the Discharger shall submit to the Executive Officer a Monitoring Well Installation Completion Report (MWICR) (see Attachment E) prepared under the direct supervision of, and certified by, a California registered civil engineer or a California registered geologist with experience in hydrogeology.
7. Groundwater samples from monitoring wells shall be collected as specified in an approved Monitoring Well Installation and Sampling Plan.

General Monitoring Requirements

1. The Discharger shall comply with all the "Requirements Specifically for Monitoring Programs and Monitoring Reports" as specified in the Standard Provisions and Reporting Requirements.
2. The sampling procedures listed in this MRP are standards currently recognized by the Central Valley Water Board. When special procedures appear to be necessary, the Discharger may request approval of alternative sampling procedures for nutrient management. The Executive Officer will review such requests and if adequate justification is provided, may approve the requested alternative sampling procedures.
3. The Discharger shall use clean sample containers and sample handling, storage, and preservation methods that are accepted or recommended by the selected analytical laboratory or, as appropriate, in accordance with approved United States Environmental Protection Agency analytical methods.
4. All samples collected shall be representative of the volume and nature of the material being sampled.
5. All sample containers shall be labeled and records maintained to show the time and date of collection as well as the person collecting the sample and the sample location.
6. All samples collected for laboratory analyses shall be preserved and submitted to the laboratory within the required holding time appropriate for the analytical method used and the constituents analyzed.
7. All samples submitted to a laboratory for analyses shall be identified in a properly completed and signed Chain of Custody form.

8. For field test instruments used for pH, temperature, and electrical conductivity:
 - a. The operator shall be trained in the proper use and maintenance of the instruments;
 - b. The instruments shall be field calibrated prior to each monitoring event; and
 - c. Instruments shall be serviced and/or calibrated by the manufacturer at the recommended frequency.

B. RECORD-KEEPING REQUIREMENTS

The Discharger shall maintain on-site for a period of five years from the date they are created all information as follows:

1. All information necessary to document implementation and management of the minimum elements of the nutrient management plan (NMP);
2. All records for the production area including:
 - a. Records documenting the inspections required under the Monitoring Provisions above.
 - b. Records documenting any corrective actions taken to correct deficiencies noted as a result of the inspections required in the Monitoring Provisions above. Deficiencies not corrected in 30 days must be accompanied by an explanation of the factors preventing immediate correction;
 - c. Records of the date, time, and estimated volume of any overflow;
 - d. Records of mortality management and practices;
 - e. Steps and dates when action is taken to correct unauthorized releases as reported in accordance with Priority Reporting of Significant Events below; and
 - f. Records of monitoring activities and laboratory analyses conducted as required in Standard Provisions and Reporting Requirements, D.5.
3. All records for the land application area including:

- a. Expected and actual crop yields;
- b. Identification of crop, acreage, and dates of planting and harvest for each field;
- c. Dates, locations, and approximate weight and moisture content, or volume and density, of manure applied to each field;
- d. Dates, locations, and volume of wastewater applied to each field;
- e. Weather conditions at time of manure and wastewater applications and for 24 hours prior to and following applications;
- f. Records documenting the inspections conducted as required under the Monitoring Provisions above;
- g. Dates, locations, and test methods for soil, manure, wastewater, irrigation water, and plant tissue sampling;
- h. Results from manure, wastewater, irrigation water, soil, plant tissue, and storm water sampling;
- i. Explanation for the basis for determining manure or wastewater application rates, as provided in the Technical Standards for Nutrient Management established by the Order (Attachment C);
- j. Calculations showing the total nitrogen, phosphorus, and potassium to be applied to each field, including sources other than manure or wastewater;
- k. Total amount of nitrogen, phosphorus, and potassium actually applied to each field, including documentation of calculations for the total amount applied;
- l. The method(s) used to apply manure and/or wastewater;
- m. Dates of manure and/or wastewater application equipment inspections;
- n. Records documenting any corrective actions taken to correct deficiencies noted as a result of the inspections required in the Monitoring Provisions above. Deficiencies not corrected in 30 days must be accompanied by an explanation of the factors preventing immediate correction; and

- o. Records of monitoring activities and laboratory analyses conducted as required in Standard Provisions and Reporting Requirements, D.5.
4. A copy of the Discharger's site-specific NMP;
5. All Manure/ Wastewater Tracking Manifest forms (Attachment D) which include information on the manure hauler, destination of the manure, dates hauled, amount hauled, and certification; and
6. All analyses of manure, wastewater, irrigation water, soil, plant tissue, surface water, storm water, and groundwater.

C. REPORTING REQUIREMENTS

Priority Reporting of Significant Events (Prompt Action Required)

The Discharger shall report any noncompliance that endangers human health or the environment or any noncompliance with Prohibitions A.1 through A.13 in the Order, within 24 hours of becoming aware of its occurrence. The incident shall be reported to the Central Valley Water Board Office, local environmental health department, Glenn County Planning and Public Works, and to the California Office of Emergency Services (OES). During non-business hours, the Discharger shall leave a message on the Board's voice mail. The message shall include the time, date, place, and nature of the noncompliance, the name and number of the reporting person, and shall be recorded in writing by the Discharger. The OES is operational 24 hours a day. The Discharger shall collect a sample of the discharge, refrigerate it, and provide it to the Board upon request. A written report shall be submitted to the Board office **within two weeks** of the Discharger becoming aware of the incident. The report shall contain a description of the noncompliance, its causes, duration, and the actual or anticipated time for achieving compliance. The report shall include complete details of the steps that the Discharger has taken or intends to take, in order to prevent recurrence. All intentional or accidental spills shall be reported as required by this provision. The written submission shall contain:

1. The approximate date, time, and location of the noncompliance including a description of the ultimate destination of any unauthorized discharge and the flow path of such discharge to a receiving water body;
2. A description of the noncompliance and its cause;
3. The flow rate, volume, and duration of any discharge involved in the noncompliance;

4. The amount of precipitation (in inches) the day of any discharge and for each of the seven days preceding the discharge;
5. The period of noncompliance, including dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
6. A time schedule and a plan to implement corrective actions necessary to prevent the recurrence of such noncompliance.

Annual Reporting

By January 15 of each year, the Discharger will submit an Annual Report containing the information on facility operations outlined in the Monitoring and Reporting program and covering the period from 1 November through 31 October of the previous year. The initial annual report submitted under this Order will cover the period between 2 January 2008 and 31 October 2008. The initial annual report will include results of irrigation water monitoring and an assessment as to whether the amount of nitrogen in the irrigation water is sufficient to require inclusion of nitrogen from the irrigation water into the NMP. If the quantity of nitrogen in the irrigation water is negligible, the Discharger, as part of the annual report, may request a reduction in the testing of the irrigation water for nitrogen.

The annual report shall be completed on an annual report form provided by the Executive Officer (available on the Central Valley Water Board website at http://www.waterboards.ca.gov/centralvalley/available_documents/index.html#confined) and shall include all the information as specified below.

1. Identification of the beginning and end dates of the annual reporting period;
2. An Annual Dairy Facility Assessment using the tool provided by the Executive Officer or any future revisions thereto;
3. Number and type of animals, whether in open confinement or housed under roof;
4. Estimated amount of total manure (tons) and wastewater (gallons or acre-inches) generated by the facility during the annual reporting period and a calculation of the nitrogen, phosphorus, potassium, and total salt content of this waste;
5. Estimated amount of total manure (tons) and wastewater (gallons or acre-inches) applied to each land application area during the annual reporting period and a calculation of the nitrogen, phosphorus, potassium, and total salt content of this waste;

6. Estimated amount of total manure (tons) and wastewater (gallons or acre-inches) transferred to other persons by the facility during the annual reporting period and a calculation of the nitrogen, phosphorus, potassium, and total salt content of this waste;
7. A map showing the location and number of acres of each field on the dairy and whether each field was or was not used for land application of manure and/or wastewater during the annual reporting period;
8. Summary of all discharges from the production area that occurred during the annual reporting period, including date, time, location, approximate volume, a map showing discharge, ultimate destination of the discharge, and method of measuring discharge flows;
9. Summary of all storm water discharges from the land application area during the annual reporting period, including the date, time, approximate volume, duration, location, a map showing the discharge and sample locations, ultimate destination of the discharge, and rationale for sample locations;
10. Summary of all discharges other than storm water from the land application area that have occurred during the annual reporting period, including the date, time, approximate volume, location, source of discharge (i.e., tailwater, wastewater, or blended wastewater), a map showing the discharge locations, ultimate destination of the discharge, and method of measuring discharge flows;
11. A statement indicating if the NMP has been updated and whether the current version of the facility's NMP was developed or approved by a certified nutrient management planner as specified in Attachment C of the Order;
12. Copies of all manure/ wastewater tracking manifests for the reporting period;
13. Copies of all written agreements with each third party that receives manure or wastewater from the Discharger for its own use from the Discharger;
14. Copies of laboratory analyses of all storm water samples, including chain-of-custody forms and laboratory quality assurance/quality control results;
15. Tabulated analytical data for samples of manure, wastewater, irrigation water, soil, and plant tissue. The data shall be tabulated to clearly show sample dates, constituents analyzed, constituent concentrations, and detection limits; and

16. Results of the Record-Keeping Requirements for the production and land application areas specified in Record-Keeping Requirements B.2.b, B.2.c, B.3.a, B.3.b, B.3.c, B.3.d, B.3.e, B.3.j., B.3.k, and B.3.n above.

Groundwater Reporting

By 30 June 2008, and semiannually thereafter, the Discharger shall report the results of all groundwater monitoring. Groundwater monitoring reports shall include all laboratory analyses (including chain-of-custody forms and laboratory quality assurance/quality control results) and tabular and graphical summaries of the monitoring data. Data shall be tabulated to clearly show the sample dates, constituents analyzed, constituent concentrations, detection limits, depth to groundwater, and groundwater elevations. Graphical summaries of groundwater gradients and flow directions shall also be included. Each groundwater monitoring report shall include a summary data table of all historical and current groundwater elevations and analytical results. The submittal shall include a description of the statistical or non-statistical methods used in evaluating the groundwater monitoring data. The methods must be approved by the Executive Officer. The groundwater monitoring reports shall be certified by a California registered professional as specified in General Reporting Requirements C.9 of the Standard Provisions and Reporting Requirements of the Order.

Storm Water Reporting

By 30 June 2009, and annually thereafter, the Discharger shall submit an annual report that details the results of the previous year's storm water monitoring, including the Discharger's preparation for the upcoming wet season for all land application areas. The annual report shall include a map showing all sample locations for all land application areas, rationale for all sampling locations, the results (including the laboratory analyses, chain of custody forms, and laboratory quality assurance/quality control results) of all samples of storm water, an assessment of the storm water monitoring results, an explanation for any pollutants found in storm water from any land application area, and any modifications made to the facility or sampling plan in response to pollutants detected in storm water. The annual report must also include documentation if no significant discharge of storm water occurred from the land application area(s) or if it was not possible to collect any of the required samples or perform visual observations due to adverse climatic conditions.

If the storm water monitoring for any land application area indicates pollutants have not been detected in storm water samples, the Discharger may propose to the Executive Officer to reduce the constituents and/or sampling frequency for that area.

General Reporting Requirements

1. The results of any monitoring conducted more frequently than required at the locations specified herein shall be reported to the Central Valley Water Board.
2. Laboratory analyses for manure, wastewater, and soil shall be submitted to the Central Valley Water Board upon request by the Executive Officer.
3. Each report shall be signed by the Discharger or a duly authorized representative as specified in the General Reporting Requirements C.7 of the Standard Provisions and Reporting Requirements (SPRR), and shall contain the following statement:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

4. Submit reports to:

California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670
Attention: Confined Animal Regulatory Unit

ORDERED BY:

PAMELA C. CREEDON, Executive Officer

Date

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

**STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR INDIVIDUAL WASTE DISCHARGE REQUIREMENTS
FOR
DAIRIES IN THE SACRAMENTO AND SAN JOAQUIN RIVER BASINS
August 2007**

A. Introduction

1. These Standard Provisions and Reporting Requirements (SPRR) are applicable to milk cow dairies that are regulated pursuant to the provisions of Title 27 California Code of Regulations (CCR) Division 2, Subdivision 1, Chapter 7, Subchapter 2, Sections 22560 et seq.
2. Any violation of the Order constitutes a violation of the California Water Code and, therefore, may result in enforcement action.
3. If there is any conflicting or contradictory language between the Order, the Monitoring and Reporting Program (MRP) associated with the Order, or the SPRR, then language in the Order shall govern over the MRP and the SPRR, and language in the MRP shall govern over the SPRR.

B. Standard Provisions

1. The requirements prescribed in the Order do not authorize the commission of any act causing injury to the property of another, or protect the Discharger from liabilities under federal, state, or local laws.
2. The Discharger shall comply with all federal, state, county, and local laws and regulations pertaining to the discharge of wastes from the facility that are at least as stringent as the requirements of the Order.
3. All discharges from the facility must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to storm drain systems or to other courses under their jurisdiction that are at least as stringent as the requirements of the Order.
4. The Order does not convey any property rights or exclusive privileges.
5. The provisions of the Order are severable. If any provision of the Order is held invalid, the remainder of the Order shall not be affected.
6. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with the Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.

7. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the Order shall not be a defense for violations of the Order by the Discharger.
8. The filing of a request by the Discharger for modification, revocation and reissuance, or termination of the Order, or notification of planned changes or anticipated noncompliance, does not stay any condition of the Order.
9. The Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may modify or revoke and reissue the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the California Water Code.
10. The Discharger shall provide to the Executive Officer, within a reasonable time, any information which the Executive Officer may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating the Discharger's coverage under the Order or to determine compliance with the Order. The Discharger shall also provide to the Executive Officer upon request, copies of records required by the Order to be kept.
11. After notice and opportunity for a hearing, the Order may be terminated or modified for cause, including but not limited to:
 - a. Violation of any term or condition contained in the Order;
 - b. Obtaining the Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
12. The Order may be modified if new state statutes or regulations are promulgated, and if more stringent applicable water quality standards are approved pursuant to Title 27 of the CCR, or as adopted into the Central Valley Water Board *Water Quality Control Plans (Basin Plans) for the Sacramento River and San Joaquin River Basins (4th Ed)*. The Order may also be modified for incorporation of land application plans, and/or changes in the waste application to cropland.
13. The Central Valley Water Board may review and revise the Order at any time upon application of any affected person or by motion of the Regional Board.
14. The Discharger shall ensure compliance with existing and/or future promulgated standards that apply to the discharge.

15. The Discharger shall permit representatives of the Central Valley Water Board and the State Water Resources Control Board (State Water Board), upon presentations of credentials at reasonable hours, to:
 - a. Enter premises where wastes are treated, stored, or disposed and where any records required by the Order are kept;
 - b. Copy any records required to be kept under terms and conditions of the Order;
 - c. Inspect facilities, equipment (monitoring and control), practices, or operations regulated or required by the Order; and
 - d. Sample, photograph, and/or video tape any discharge, waste, waste management unit, or monitoring device.
16. The Discharger shall properly operate and maintain in good working order any facility, unit, system, or monitoring device installed to achieve compliance with the Order. Proper operation and maintenance includes best practicable treatment and controls, and the appropriate quality assurance procedures.
17. Animal waste storage areas and containment structures shall be designed, constructed, and maintained to limit, to the greatest extent possible, infiltration, inundation, erosion, slope failure, washout, overtopping, by-pass, and overflow.
18. Setbacks or separation distances contained under Water Wells, Section 8, Part II, in the *California Well Standards, Supplemental Bulletin 74-90 (June 1991)*, and *Bulletin 94-81 (December 1981)*, California Department of Water Resources (DWR), shall be maintained for the installation of all monitoring wells and groundwater supply wells at existing dairies. A setback of 100 feet is required between supply wells and animal enclosures in the production area. A minimum setback of 100 feet, or other control structures (such as housing, berming, grading), shall be required for the protection of existing wells or new wells installed in the cropland. If a county or local agency adopts more stringent setback standards than that adopted by the DWR, then these local standards shall carry precedence over the Well Standards of DWR, and the Discharger shall comply with the more stringent standards.
19. Following any storm event that causes the freeboard of any wastewater holding pond to be less than one (1) foot for below-grade ponds, or two (2) feet for above-grade ponds, the Discharger shall take action as soon as possible to provide the appropriate freeboard in the wastewater holding pond.
20. For any electrically operated equipment at the facility, the failure of which would cause loss of control or containment of waste materials, or violation of this Order, the Discharger shall employ safeguards to prevent loss of control over wastes or violation of this Order. Such safeguards may include alternate power sources,

standby generators, standby pumps, additional storage capacity, modified operating procedures, or other means.

C. General Reporting Requirements

1. The Discharger shall give at least 60 days advance notice to the Central Valley Water Board of any planned changes in the ownership or control of the facility.
2. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of the Order by letter at least 60 days in advance of such change, a copy of which shall be immediately forwarded to the appropriate Central Valley Water Board office listed below in the General Reporting Requirements C.11.
3. To assume operation under the Order, any succeeding owner or operator must request, in writing, that the Executive Officer transfer coverage under the Order. The Central Valley Water Board will provide a form for this request that will allow the succeeding owner or operator to provide their full legal name, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a responsibility statement and a signed statement in compliance with General Reporting Requirement C.7 below. The form will also include a statement for signature that the new owner or operator assumes full responsibility for compliance with the Order and that the new owner or operator will implement the Waste Management Plan and the NMP prepared by the preceding owner or operator. Transfer of the Order shall be approved or disapproved in writing by the Executive Officer. The succeeding owner or operator is not authorized to discharge under the Order and is subject to enforcement until written approval of the coverage transfer from the Executive Officer.
4. The Executive Officer may require the Discharger to submit technical reports pursuant to the Order and California Water Code Section 13267.
5. The Discharger shall identify any information that may be considered to be confidential under State law and not subject to disclosure under Public Records Act. The Discharger shall identify the basis of confidentiality. If the Executive Officer cannot identify a reasonable basis for treating the information as confidential, the Executive Officer will notify the Discharger that the information will be placed in the public file unless the Central Valley Water Board receives, within 10 calendar days, a written request from the Discharger to keep the information confidential containing a satisfactory explanation supporting the information's confidentiality.
6. Except for data determined to be exempt from disclosure under the Public Records Act (California Government Code Sections 6275 to 6276), and data determined to be confidential under Section 13267(b)(2) of the California Water Code, all reports prepared in accordance with the Order and submitted to the Executive Officer shall

be available for public inspection at the offices of the Central Valley Water Board. Data on waste discharges, water quality, meteorology, geology, and hydrogeology shall not be considered confidential.

7. All technical reports and monitoring program reports shall be accompanied by a cover letter with the certification specified in C.8 below and be signed by a person identified below:
 - a. For a sole proprietorship: by the proprietor;
 - b. For a partnership: by a general partner;
 - c. For a corporation: by a principal executive officer of at least the level of senior vice-president; or
 - d. A duly authorized representative if:
 - (1) The authorization is made in writing by a person described in Subsection a, b, or c of this provision;
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility, such as the position of manager. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and
 - (3) The written authorization is submitted to the Central Valley Water Board.
8. Each person, as specified in C.7 above, signing a report required by the Order or other information requested by the Central Valley Water Board shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
9. In addition to Item C.7 above, all technical reports required in the Order that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by, or under the direction of, and signed by persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1 or federal officers and employees who are exempt from these Sections by California Business and Professions Code, Section 6739 or 7836. To demonstrate compliance with Title 16 CCR, Sections 415 and 3065, all technical reports must

contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

10. The Discharger shall file a Report of Waste Discharge with the Central Valley Water Board at least 140 days before making any material change in the character, location, or volume of the discharge. A material change includes, but is not limited to, the following:
 - a. The addition of a new wastewater that results in a change in the character of the waste;
 - b. Significantly changing the disposal or waste application method or location;
 - c. Significantly changing the method of treatment;
 - d. Increasing the discharge flow beyond that specified in the Order; and/or
 - e. Expanding existing herd size beyond the maximum herd size listed in the Order.
11. All reports shall be submitted to the following address:

For facilities in Butte, Lassen, Modoc, Plumas, Tehama, and Shasta counties, submit reports to:

California Regional Water Quality Control Board
Central Valley Region
415 Knollcrest Drive, Suite 100
Redding, CA 96002
Attention: Confined Animal Regulatory Unit

For facilities in all other counties, submit reports to:

California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670
Attention: Confined Animal Regulatory Unit

D. Requirements Specifically for Monitoring Programs and Monitoring Reports

1. The Discharger shall file self-monitoring reports and/or technical reports in accordance with the detailed specifications contained in the MRP attached to the Order.

2. The Discharger shall maintain a written monitoring program sufficient to assure compliance with the terms of the Order. Anyone performing monitoring on behalf of the Discharger shall be familiar with the written program.
3. The monitoring program shall include observation practices, sampling procedures, and analytical methods designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points.
4. All instruments and devices used by the Discharger for the monitoring program shall be properly maintained and shall be calibrated as recommended by the manufacturer and at least once annually to ensure their continued accuracy.
5. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by the Order, and records of all data used to complete the reports. Records shall be maintained for a minimum of five years from the date of sample, measurement, report, or application. Records shall also be maintained after facility operations cease if wastes that pose a threat to water quality remain at the site. This five-year period may be extended during the course of any unresolved litigation regarding the discharge or when requested in writing by the Central Valley Water Board Executive Officer.

a. Records of on-site monitoring activities shall include the:

- (1) Date that observations were recorded, measurements were made, or samples were collected;
- (2) Name and signature of the individual(s) who made the observations, made and recorded the measurements, or conducted the sampling;
- (3) Location of measurements or sample collection;
- (4) Procedures used for measurements or sample collection;
- (5) Unique identifying number assigned to each sample; and
- (6) Method of sample preservation utilized.

b. Records of laboratory analyses shall include the:

- (1) Results for the analyses performed on the samples that were submitted;
- (2) Chain-of-custody forms used for sample transport and submission;
- (3) Form that records the date that samples were received by the laboratory and specifies the analytical tests requested;

- (4) Name, address, and phone number of the laboratory which performed the analysis;
- (5) Analytical methods used;
- (6) Date(s) analyses were performed;
- (7) Identity of individual(s) who performed the analyses or the lab manager; and
- (8) Results for the quality control/quality assurance (QA/QC) program for the analyses performed.

E. Enforcement

1. California Water Code Section 13350 provides that any person who violates WDRs or a provision of the California Water Code is subject to civil liability of up to \$5,000 per day or \$15,000 per day of violation, or when the violation involves the discharge of pollutants, is subject to civil liability of up to \$10 per gallon, or \$20 per gallon; or some combination thereof, depending on the violation, or upon the combination of violations. In addition, there are a number of other enforcement provisions that may apply to violation of the Order.

INFORMATION SHEET

Waste Discharge Requirements Order No. R5-2008-0122
Greenwood Dairy
Glenn County

INTRODUCTION

Daniel Vander Dussen has proposed to expand the herd at his dairy in Glenn County, south of the city of Orland. The maximum herd size at the dairy after herd size expansion will be 4,100 total head: 3,500 milking cows, 550 dry cows, 50 spring heifers. With the expansion the dairy will include a milking parlor, freestall barns, shade structures, a Saudi-style barn, hay barns, a feed barn, a pole barn, a maternity barn, a shop, an office, a concrete-lined process pit, a mechanical separator, five wastewater storage lagoons, and one emergency detention basin. Wastewater is land-applied to 680 of the 890 acres for agricultural production. With the proposed expansion, dried manure not used for bedding will be sold offsite, as the nutrient requirements of the onsite crops will be met with process water application.

A Mitigated Negative Declaration and a Conditional Use permit were approved by Glenn County Department of Planning and Public Works on December 19, 2007.

As part of its development of a General Order for existing milk cow dairies, the Central Valley Regional Board required all existing dairies to file a Report of Waste Discharge (ROWD) by 17 October 2005 to document conditions at each dairy as of that date, including the number of mature dairy cows. The ROWD also requested the maximum number of mature dairy cows at each dairy within the preceding 12 months period. The maximum number of mature dairy cows that can be at an existing dairy is limited to 115% of the larger of these two numbers for the dairy to qualify for coverage under the General Order. Dairies in existence as of October 2005 that want to increase beyond this number must get Individual Waste Discharge Requirements.

Under the General Order the herd size of mature cows at the dairy is limited to the number given in the 2005 ROWD plus 15%, or 3,000 plus 450, for a total of 3,450 mature cows. These Waste Discharge Requirements will allow the Greenwood Dairy to increase its herd size to 4,100, the number allowed under the Mitigated Negative Declaration approved by Glenn County. This includes 3,500 milk cows, 550 dry cows, and 50 spring heifers. The facilities constructed at the dairy are all sized to house the number of animals allowed under the Conditional Use Permit and Mitigated Negative Declaration.

A Report of Waste Discharge dated August 2007 has been submitted for the expanded dairy. Additional information has been submitted to the Regional Board including a Nutrient Management Plan and Waste Management Plan.

CURRENT CONDITIONS

The site of the dairy is zoned A-1 (General Agricultural) and has been historically used for growing crops (primarily alfalfa and forage crops). It has been in operation since May 2001. The dairy property is generally flat lying, and the soil is composed of Cortina very gravelly sandy loam that is very permeable. The cropland is comprised of Tehama Silt Loam, Tehama Gravelly Loam, Hillgate Clay Loam, Hillgate Loam and Arbuckle Gravelly Loam. All of the cropland soils are well drained with moderate to slow permeability.

WASTE GENERATION AT FACILITY

Waste generated at the facility consists of manure, barn wash water, and rainfall and runoff that come into contact with manure or other waste. After the herd expansion, manure generation is estimated at 10,088 dry tons per year. Approximately 20 percent (2,018 tons per year) is retained for use as bedding.

Currently an estimated 432,000 gallons per day of clean water are used for the production area of the dairy. With the expansion, an estimated 589,210 gallons per day will be used.

The annual rainwater runoff and a 25-year, 24-hours storm event after evaporation will accumulate approximately 1,781,557 cubic feet, which will provide only a small percentage of the annual water needs for proposed crops.

The total amount of wastewater requiring storage over the 120-day maximum storage period, after removing losses due to evaporation and adding one 25-year 24-hour storm, is 4,294,389 cubic feet.

WASTE MANAGEMENT AT FACILITY

Wastewater is passed through a concrete-lined process pit, mechanical solid separator, and then into five wastewater storage ponds. The solids and excess manure in corrals are stockpiled on the concrete slab at the solids separator and there a portion of the solids will be dried and used as animal bedding, the remainder will be sold and taken offsite.

Pond 1, constructed in 2001, is 350 by 600 feet in area and 13.5 feet deep. Pond 2, also constructed in 2001, is 225 by 290 feet in area and 14.5 feet deep. These two ponds are clay lined. The liners have a minimum permeability of 1×10^{-6} centimeters per second, with soils compacted to 92 percent relative compaction. Four new ponds were constructed in Spring 2006. Ponds 3, 4, 5, and 6 are lined with soil 12 inches thick compacted to a minimum permeability of 1×10^{-6} centimeters per second and 95 percent relative compaction. Ponds 3

and 4 are 164 feet by 809 feet and 796 feet, respectively and Pond 5 is 158 by 782 feet. The three ponds are 14 feet deep. Pond 6 is 6 feet deep and 917 feet by 568.5 feet.

LAND APPLICATION OF WASTEWATER TO CROPS

Wastewater and manure generated at the facility are currently applied to land owned and/or operated by the dairy at agronomic rates as described in the Nutrient Management Plan which is being updated.

All fields that receive liquid wastewater have tail water recovery via field drains and sumps. The wastewater piped from Pond 1 to the eastern and southern most fields is routed through a flow meter. Another flow meter is to be installed for water piped from Ponds 3 through 6.

The Order requires that wastewater samples be collected and analyzed, and the volume of wastewater applied to each field determined. This information will be used to refine the Nutrient Management Plan on an ongoing basis.

The dates and volume of each irrigation application (without wastewater) are recorded. These data are used to ensure that wastewater is not applied when the ground is at or above field moisture capacity, and to limit the flushing of nutrients below the root zone due to excessive application of irrigation water. In addition, samples of the irrigation water are tested to determine if there are nitrogen compounds present in the groundwater such that the Nutrient Management Plan should be amended to reflect nitrogen added from the irrigation water.

Soil monitoring and plant tissue monitoring are also required and the results used to further refine the Nutrient Management Plan.

GROUND WATER AND SURFACE WATER MONITORING PROVISIONS

There are five agricultural supply wells and two domestic wells on the property. Ten monitoring wells have been installed. These wells monitor upgradient groundwater quality (unaffected by dairy operations) and groundwater downgradient of the location of corrals, land application areas, and the wastewater storage lagoons. The Order requires sampling of these wells. Regional ground water flow is to the southeast and the depth to groundwater at the facility ranged from 34.95 to 46.10 feet below ground surface in December 2007.

Sampling of the older monitoring wells was conducted in December 2007. The four newly constructed wells were sampled in March 2008. The results indicate

some slight degradation of groundwater with respect to nitrate and sodium in the vicinity of the older ponds and down gradient of the corrals. The domestic and agricultural wells at the facility are sampled semiannually for electrical conductivity and nitrate-nitrogen, and at least once for general minerals, ammonia-nitrogen, total dissolved solids, and fecal coliform. The monitoring wells will be sampled semiannually for electrical conductivity, pH, nitrate-nitrogen, ammonium-nitrogen, total dissolved solids, fecal coliform, phosphorous, and potassium; and annually for general minerals. Prior to any pre-sample purging, the depth of groundwater shall be measured from a surveyed reference point (anticipated to be the top of each well vault) to the nearest 0.01 foot in each well.

Because all fields receiving solid manure or liquid wastewater have tailwater recovery systems, it is not anticipated that there will be off-property discharges of waste, which would be in violation of the Water Code. It is expected that, if the Nutrient Management Plan and other conditions of the Order regarding waste application are followed, any discharges of storm water from fields receiving wastewater should not contain significant quantities of waste constituents. To verify this, representative samples of storm water will be collected from a portion of the fields each year to determine if waste constituents are present. Storm water monitoring will be adjusted based on the results from these samples

REPORTING REQUIREMENTS

By January 15 of each year, the Discharger will submit an Annual Report containing the information on facility operations outlined in the Monitoring and Reporting Program and covering the period from 1 November through 31 October of the previous year. The initial annual report will cover the period between 1 January 2008 and 31 October 2008.

By 30 June 2008, and semiannually thereafter, the Discharger will submit the results of groundwater monitoring; and storm water monitoring conducted pursuant to the Monitoring and Reporting Program.

In the event of any noncompliance with the requirements of the Order that endangers human health or the environment, or any noncompliance with the prohibitions in the Order as listed in the Noncompliance Reporting provisions of the Monitoring and Reporting Program, the Discharger shall notify the Board within 24 hours of becoming aware of the occurrence. Information about the situation shall be collected and submitted in accordance with the Priority Reporting of Significant Events requirements in the Monitoring and Reporting Program.

APPLICABLE WATER QUALITY STANDARDS

The Central Valley Water Board has adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (4th ed.). This Basin Plan designates the beneficial uses of groundwater and surface waters of the Region, specifies water quality objectives to protect those uses, and includes implementation programs for achieving water quality objectives. The Basin Plan also includes plans and policies of the State Water Board incorporated by reference, including State Water Board Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality Waters in California*), State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*), and State Water Board Resolution No. 92-49 (*Policies and Procedures for Investigation and Cleanup or Abatement of Discharges Under Water Code Section 13304*).

Beneficial Uses of Surface Water and Groundwater

Pursuant to Chapter II of the Basin Plan, the beneficial uses of surface water may include: municipal and domestic supply; agricultural supply; agricultural stock watering; industrial process supply; industrial service supply; hydro-power generation; body contact water recreation; canoeing and rafting; other non-body contact water recreation; warm freshwater aquatic habitat; cold freshwater aquatic habitat; warm fish migration habitat; cold fish migration habitat; warm spawning habitat; cold spawning habitat; wildlife habitat; navigation; rare, threatened, and endangered species; groundwater recharge; freshwater replenishment; aquaculture; and preservation of biological habitats of special significance. The Basin Plan contains a Table that lists the surface water bodies and the beneficial uses and where not listed, the Basin Plan designates beneficial uses based on the waters to which they are tributary or applicable state or federal requirements. These beneficial uses are protected in this Order by, among other requirements, the prohibition of a direct or indirect discharge of waste and/or storm water from the production area to surface waters, the prohibition of discharge of wastewater to surface waters from cropland, the prohibition of any discharge of storm water to surface water from the land application areas unless the land application area has been managed consistent with a certified Nutrient Management Plan, and the prohibition of discharge of waste from existing milk cow dairies to surface waters which causes or contributes to an exceedance of any applicable water quality objective in the Basin Plan or any applicable state or federal water quality criteria, or a violation of any applicable state or federal policies or regulations.

Chapter II of the Sacramento River and San Joaquin River Basin Plan states: “*Unless otherwise designated by the Regional Water Board, all groundwaters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.*” These beneficial uses are protected in this Order by, among other requirements, the specification that the discharge of

waste at an existing milk cow dairy shall not cause a violation of water quality objectives or cause pollution or nuisance.

Water Quality Objectives

Pursuant to the California Water Code Section 13263(a), WDRs must implement the Basin Plans, which require consideration of the beneficial uses of water, water quality objectives reasonably required to protect the beneficial uses, other waste discharges, the need to prevent nuisance conditions in the disposal area, and the receiving water. The water quality objectives are implemented in WDRs consistent with the Basin Plan's *Policy for Application of Water Quality Objectives*. The Basin Plan requires that WDRs apply the most stringent objective for each constituent to ensure that discharges do not cause adverse affects to any beneficial use.

Water quality objectives are the limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area. Water quality objectives apply to all waters within a surface water or groundwater resource for which beneficial uses have been designated. Water quality objectives are listed separately for surface water and groundwater in Chapter III of the Basin Plan and are either numeric or narrative.

The primary waste constituents of concern due to discharges of waste from dairies are ammonia, nitrates, phosphorus, chloride, boron, salts, pathogens, and organic matter. The discharge of waste from dairies must not cause surface water or groundwater to exceed the applicable water quality objectives for those constituents.

Water Quality Objectives and Federal Criteria for Surface Water¹

Water quality objectives that apply to surface water include, but are not limited to, (1) the numeric objectives, including the bacteria objective, the chemical constituents objective (includes listed chemicals and state drinking water standards, i.e., maximum contaminant levels (MCLs) promulgated in Title 22 CCR Division 4, Chapter 15 Sections 64431 and 64444 that are applicable through the Basin Plan to waters designated as municipal and domestic supply), dissolved oxygen objectives, pH objectives, and the salinity objectives; and (2) the narrative objectives, including the biostimulatory substances objective, the chemical constituents objective, and the toxicity objective. The Basin Plan also contains numeric water quality objectives that apply to specifically identified

¹ It is important to note that this Order prohibits the direct or indirect discharge of waste and/or storm water from the production area to surface waters, the discharge of wastewater to surface waters from cropland, and requires the monitoring of discharges of storm water to surface water from the land application areas where manure or process wastewater has been applied as well as implementation of a certified Nutrient Management Plan.

water bodies, including for example, electrical conductivity objectives for the Delta.

Federal water quality criteria that apply to surface water are contained in federal regulations referred to as the California Toxics Rule and the National Toxics Rule. See 40 CFR Sections 131.36 and 131.38.

Water Quality Objectives for Groundwater

Water quality objectives that apply to groundwater include, but are not limited to, (1) numeric objectives, including the bacteria objective and the chemical constituents objective (includes state MCLs promulgated in Title 22 CCR Division 4, Chapter 15 Section 64431 and 64444 and are applicable through the Basin Plan to municipal and domestic supply), and (2) narrative objectives including the chemical constituents, taste and odor, and toxicity objectives.

Implementation of Water Quality Objectives

The Basin Plan includes an implementation program for water quality objectives called the *Policy for Application of Water Quality Objectives*, which applies to implementation of both numeric and narrative water quality objectives. To evaluate compliance with narrative objectives, the Policy requires the Regional Board to consider, on a case-by-case basis, various factors and information, including direct evidence of beneficial use impacts (e.g., a fish kill), information submitted by the discharger and other interested parties (e.g., levels that constitute natural background or site-specific conditions, such as soil types), and “*relevant numerical criteria and guidelines developed and/or published by other agencies and organizations*”, such as the State Water Resources Control Board, California Department of Health Services, Department of Fish and Game, and the United States Environmental Protection Agency (USEPA). The Policy requires the Regional Board to consider this information and determine what specific numerical limit is “*relevant and appropriate*” to the situation at hand, and, therefore should be used in determining compliance with the narrative objective.

Narrative Water Quality Objectives

Some of the considerations of relevant numerical criteria and guidelines developed or published by other agencies and organizations include:

Agriculture

The Basin Plan contains a narrative chemical constituents objective for both groundwater and surface water that states that “[waters] shall not contain chemical constituents in concentrations that adversely affect beneficial uses.” This objective applies to the protection of agricultural beneficial uses. Relevant numerical criteria and guidelines for agricultural uses of groundwater are included in publications from the National Academy of Sciences, the University of California Cooperative Extension, and the Food and Agricultural Organization of the United Nations. This information is summarized in a 1985 publication *Water*

Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, (hereafter U.N. Guidelines) and includes detailed information to evaluate the quality of irrigation water necessary to sustain various crops.

The major constituents used to assess the quality of water for beneficial uses of irrigated agriculture are salinity (expressed as total dissolved solids, or TDS), boron, chloride, and sodium. Salinity reduces crop growth by reducing the ability of plant roots to absorb water. Boron is an essential element in very low concentrations but can become toxic to plants when concentrations in water even slightly exceed the amount required for optimal growth. While boron sensitivity appears to affect a wide variety of crops, sodium and chloride toxicities are mostly limited to tree crops and woody perennials (e.g., citrus, stone-fruit, and vineyard). A predominance of sodium relative to other ions in irrigation water may also disperse soil aggregates, which in turn, affects virtually all crops by decreasing the permeability of the soil to water and air.

Nitrogen in the form of nitrate and ammonium can also affect some nitrogen sensitive crops such as sugar beets, grapes, apricots, citrus, avocado, and some grain crops. Production of nitrogen sensitive crops may be affected at nitrogen concentrations above 5 mg/L nitrate (as nitrogen) or ammonium-nitrogen.

The U.N. Guidelines conclude that salt tolerance of crops and yield reductions can vary depending on various factors, such as irrigation management, the crop being grown, and the site conditions. The U.N. Guidelines recommend that a site-specific assessment be conducted to determine if water quality above or below the U.N. Guidelines would provide protection of irrigated agricultural uses. The U.N. Guidelines divide water quality characteristics as having “No Problem – Increasing Problems – Severe Problems” and show numerical criteria that protect a full range of crops and would likely be protective under all irrigated agricultural uses. The numerical criteria for agricultural irrigation use are:

| <u>Problem and Related Constituent</u> | <u>No Problem</u> | <u>Increasing Problems</u> |
|--|--------------------------|----------------------------|
| Salinity of irrigation water (micromhos per centimeter (µmhos/cm)) | < 700 | 700 – 3,000 |
| Salinity of irrigation water (total dissolved solids (mg/L)) | < 450 | 450 – 2,000 |
| Specific Ion Toxicity | | |
| From ROOT absorption | | |
| Sodium (mg/L) | < 69 | 69 – 207 |
| Chloride (mg/L) | < 142 | 142 – 355 |
| Boron (mg/L) | < 0.7 | 0.7 – 3.0 |
| From FOLIAR absorption | | |
| Sodium (mg/L) | < 69 | > 69 |
| Chloride (mg/L) | < 106 | > 106 |
| Miscellaneous | | |
| NH ₄ -N (mg/L) (for sensitive crops) | < 5 | 5 – 30 |
| NO ₃ -N (mg/L) (for sensitive crops) | < 5 | 5 – 30 |
| HCO ₃ (mg/L) (only with overhead sprinklers) | < 90 | 90 – 520 |
| pH | Normal range = 6.5 – 8.4 | |

In determining the concentrations of the constituents listed above that will not result in adverse affects on agricultural beneficial uses in a given area, multiple criteria can apply. While the most stringent concentration becomes the constraining criterion, it is not necessarily the concentration that is required to protect all crops typically grown in the area. The U.N. Guidelines reflect the highest tolerable level of quality necessary to sustain the most sensitive crops but those crops may or may not be grown in the area. An evaluation of the existing crops grown in an area and crops that could be grown in that area is necessary to determine what the most stringent water quality criteria are that will protect all beneficial uses of water in that area. The highest water quality that is reasonable must be maintained.

Animal Drinking Water

As shown in the U.N. Guidelines, water quality needed to protect dairy animal drinking water uses are less sensitive than irrigated agriculture for all constituents shown above.

Municipal and Domestic Supply

With respect to water quality needed to protect municipal and domestic supply, the Basin Plan contains the narrative taste or odor objective that state in summary that waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affects any beneficial use, or impart undesirable tastes or odors in fish flesh or other edible products. Waste from a dairy contains organic nitrogen, a decomposition by-product of which is ammonia, a taste-producing substance that, if present in excessive concentrations, can adversely affect the beneficial use of groundwater for municipal and domestic supply. J.E. Amooore and E. Hautala have determined an

odor threshold for ammonia-nitrogen of 1.5 mg/L (*Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6 (1983)). While this numeric level is a value that is to be met at the point of use (i.e., the tap, rather than the receiving water), the Basin Plans state that “[w]ater quality objectives apply to all waters within a surface water or ground water resource for which beneficial uses have been designated, rather than at an intake, wellhead or other point of consumption.” In accordance with the *Policy on Application of Water Quality Objectives*, it is relevant, appropriate, and reasonable to use this numeric level of 1.5 mg/L ammonia-nitrogen to protect beneficial use of area groundwaters and surface waters for human consumption.

Aquatic Life

Ammonia is known to cause toxicity to aquatic organisms in surface waters. Waste from a dairy contains both ammonia and un-ionized ammonia, both of which can cause impact to aquatic life. The US EPA has established Ambient Water Quality Criteria for Ammonia for the protection of freshwater aquatic life. These criteria include an acute criterion (1-hour average) for total ammonia (including ionized and un-ionized ammonia) that is dependent on pH and fish species and a chronic criterion (30-day average) that is dependent on pH and temperature, and at temperatures less than 15 degrees centigrade (59° F) is also dependent on fish species. For freshwater aquatic life protection, the acute criterion for total ammonia-nitrogen ranges from 0.885 (at pH 9.0) to 32.6 (at pH 6.5) milligrams nitrogen per liter (mg N/L) when salmonids are present and from 1.32 (at pH 9.0) to 48.4 (at pH 6.5) mg N/L when salmonids are absent. The chronic criterion for total ammonia-nitrogen ranges from 0.179 (at pH 9.0) to 10.8 (at pH 6.5). These criteria are based on total (un-ionized plus ionized) ammonia.

The California Department of Fish and Game criteria to protect freshwater aquatic life is 0.02 mg/L un-ionized ammonia. The equilibrium between un-ionized and ionized ammonia is controlled by temperature and pH. The California Department of Fish and Game determines the concentration of un-ionized ammonia based on the known percentage of un-ionized ammonia in a concentration of total ammonia at a given temperature and pH.

Numeric Water Quality Objectives

Maximum Contaminant Levels (Drinking Water Standards)

The Basin Plan’s incorporation of MCLs by reference is prospective to incorporate changes to MCLs as changes in Title 22 CCR take effect. Should a change occur to an MCL and that MCL thereby becomes the most or more stringent objective, implementation of the changed objective would be affected through reopening of this Order.

Water Quality Objectives for Bacteria

The majority of waste collected at a dairy is fecal matter or manure. This waste contains pathogenic bacteria and can impact water quality if not properly handled. The Basin Plan contains numeric water quality objectives for bacteria in surface waters and in groundwater. For surface water, the Basin Plan specifies that “[i]n waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.” For groundwater, the Basin Plan specifies that “[i]n ground waters used for domestic or municipal supply the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.”

Receiving Water Limitations for Dairies

The numeric water quality objectives and numeric limits that are relevant and appropriate to implement narrative water quality objectives applicable to the primary waste constituents of concern in discharges of waste at dairy facilities that could affect groundwater and surface water are as follows: For groundwater, the most stringent limitations to implement narrative and numeric water quality objectives are for total coliform 2.2/100 milliliter (ml), for ammonia-nitrogen 1.5 mg/L, for boron 0.7 mg/L, for chloride 106 mg/L, for nitrate-nitrogen 5 mg/L, for EC 700 μ mhos/cm, and for TDS 450 mg/L. For surface water, the most stringent limitations to implement narrative and numeric water quality objectives and criteria are for total coliform 2.2/100 ml, for chloride 106 mg/L, for nitrate-nitrogen 5 mg/L, for EC 700 μ mhos/cm, and for TDS 450 mg/L. For surface water, the appropriate limitation for ammonia is 0.02 mg/L un-ionized ammonia or a concentration of total ammonia determined by the pH and fish species, whichever is less. Less stringent limitations may apply to different areas but can only be determined through a site-specific assessment. The Discharger may propose the application of less stringent limitations for consideration in the Monitoring and Reporting Program. Dairy waste may include other waste constituents not mentioned here. This Order requires the discharge to comply with all water quality objectives and federal water quality criteria for surface waters applicable to the discharge.